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Part 3

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1985

HEARINGS

BEFORE THE

COMMITTEE ON ARMED SERVICES
UNITED STATES SENATE

NINETY-EIGHTH CONGRESS

SECOND SESSION

ON

S. 2414

TO AUTHORIZE APPROPRIATIONS FOR FISCAL YEAR 1985 FOR THE ARMED FORCES FOR PROCUREMENT, FOR RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, FOR OPERATION AND MAINTENANCE, AND FOR WORKING CAPITAL FUNDS, TO PRESCRIBE PERSONNEL STRENGTH FOR SUCH FISCAL YEAR FOR THE ARMED FORCES AND FOR CIVILIAN EMPLOYEES OF THE DEPARTMENT OF DEFENSE, AND FOR OTHER PURPOSES

PART 3
TACTICAL WARFARE

MARCH 6, 7, 12, 13, 1984

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CONTENTS

CHRONOLOGICAL LIST OF WITNESSES

ARMY TACTICAL PROGRAMS

MARCH 6, 1984

Page

Sculley, Hon. Jay R., Assistant Secretary of the Army for Research, Development and Acquisition 1258
Wagner, Maj. Gen. Louis C., Jr., Director of Force Development, Office of the Deputy Chief of Staff for Operations and Plans 1264
Merryman, Lt. Gen. James H., Deputy Chief of Staff for Research, Development and Acquisition, Department of the Army 1289

NAVY/MARINE TACTICAL PROGRAMS

MARCH 7, 1984

Schoultz, Vice Adm. Robert F., U.S. Navy, Deputy Chief of Naval Operations (Air Warfare); accompanied by Vice Adm. James B. Busey, U.S. Navy, Commander, Naval Air Systems Command and Lt. Gen. William H. Fitch, U.S. Marine Corps, Deputy Chief of Staff for Aviation, Headquarters, U.S. Marine Corps 1484
Fitch, Gen. William H., Deputy Chief of Staff for the Marine Corps 1521

AIR FORCE TACTICAL PROGRAMS

MARCH 12, 1984

Cooper, Hon. Thomas E., Assistant Secretary of the Air Force Research, Development and Logistics 1564
Russ, Lt. Gen. Robert D., Deputy Chief of Staff, Research and Development, U.S. Air Force 1566
Monahan, Maj. Gen. George L., Jr., Director of Development and Production, Deputy Chief of Staff, Research, Development and Acquisition, U.S. Air Force 1692
Gorton, Maj. Gen. William A., Director, Operational Requirements, Deputy Chief of Staff, Research, Development and Acquisition 1723

JOINT SURVEILLANCE TARGET ACQUISITION RADAR SYSTEM (JSTARS) AND JOINT TACTICAL MISSILE SYSTEM (JTACMS)

MARCH 13, 1984

Russ, Lt. Gen. Robert D., Deputy Chief of Staff for Research, Development, and Acquisition, U.S. Air Force 1774
Merryman, Lt. Gen. James H., Deputy Chief of Staff, Research, Development, and Acquisition, Headquarters, Department of the Army 1781
Index i

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1985

TUESDAY, MARCH 6, 1984

U.S. Senate,
Subcommittee on Tactical Warfare,
Committee on Armed Services,
Washington, D.C.

ARMY TACTICAL PROGRAMS

The subcommittee met in executive session, pursuant to notice, at 8:55 a.m., in room SR-222, Russell Senate Office Building, Senator Barry Goldwater (chairman) presiding.

Present: Senators Goldwater, Warner, Levin, Kennedy, and Bingaman.

Staff present: Alan R. Yuspeh, general counsel; William E. Hoehn, Jr., Carl M. Smith, James C. Smith III, John G. Campbell, professional staff members; Douglas R. Graham, research assistant; and Marie Fabrizio Dickinson, staff assistant.

Also present: Gerald J. Smith, assistant to Senator Goldwater; Les Brownlee, assistant to Senator Warner; Ronald P. Kelly, assistant to Senator Humphrey; Jon Etherton, assistant to Senator Jepsen; Mark J. Albrecht, assistant to Senator Wilson; Peter D. Lennon, assistant to Senator Levin; Gregory P. Craig, and James Steinberg, assistants to Senator Kennedy; and Edward McGaffigan, Jr., assistant to Senator Bingaman.

OPENING STATEMENT BY SENATOR BARRY GOLDWATER, CHAIRMAN

Senator Goldwater. The meeting will come to order. This morning we convene for the first of our service hearings. Our witnesses are from the Army, Hon. Jay Sculley, Assistant Secretary of the Army for Research, Development and Acquisition; Lt. Gen. Jim Merryman, the Deputy Chief of Staff for Research, Development and Acquisition; and Maj. Gen. Lou Wagner, the Director of Force Development under Deputy Chief of Staff for Operations and Plans. This is the same team that testified before the subcommittee last year, and we look forward to another productive session today on the fiscal year 1985 budget.

I understand that General Merryman has announced his intention to retire this summer, and while we don't like that, we offer him special recognition and thanks for his many years of service, especially his assistance to this subcommittee in the past 3 years.

We are in executive session so that we can get into the classified details of the Army programs. I have asked the witnesses to focus on the major Army R&D and procurement programs that account for the largest portion of their fiscal year 1985 budget. We will accept material for the record on all programs in an attempt to make the public hearing record as complete as possible.

I have also asked the witnesses to compare U.S. systems to their Soviet counterparts and to use the information furnished to us in our earlier DIA threat hearing as a basis for comparison.

I think we have to realize, gentlemen, that we are going to be asked to make cuts. We have no idea yet what the Budget Committee is going to send to us as the target. So you can consider every item that you talk about as a potential target for reduction. I don't like this reduction idea; I don't think the President likes it; and as of now, he is not going to do it. But as of tomorrow, I think he is going to have to do it. And we are going to have to live with it whether we like it or not. So just be forewarned that some of your favorites may not get all the money you want. On the other hand, we will do our best to see that you come through on it.

Now, as always, if you have prepared statements of any length and would rather summarize, we will put the statements in the record as if read.

Our first witness will be Secretary Sculley, and you can proceed as you wish.

STATEMENT OF HON. JAY R. SCULLEY, ASSISTANT SECRETARY OF THE ARMY FOR RESEARCH, DEVELOPMENT AND ACQUISITION

Dr. **Sculley**. Thank you, Mr. Chairman.

It is a privilege for the three of us to appear once again before your subcommittee. We have previously submitted an extensive statement for the record, and with your permission, we would ask to have it entered.

Senator **Goldwater**. It will be made a part of the record.

[See statement "Equipping the United States Army," p. 1345]

Dr. **Sculley**. We look forward to working with you to meet our common goal, that of providing an Army of excellence, an Army that can fight and win anywhere.

BUDGET SUMMARY

[TOA—in millions of dollars]

	Fiscal years—		
	1983	1984	1985
Research, development, test, and evaluation	3,895	4,259	4,987
Procurement:			
Aircraft	2,498	3,273	4,008
Missiles	2,683	2,824	3,442
WTCV	4,597	4,663	5,093
Ammunition	2,124	1,940	2,494
Other	4,007	4,650	6,022
Subtotal procurement	15,909	17,350	21,060
Total acquisition	19,804	21,609	26,047

For the past 2 years we referred to budget increases as important first steps toward resolving significant deficiencies in both quantity and quality of arms and equipment. To continue and support these past efforts, we are presenting a combined procurement and RDT&E request of $26 billion for fiscal year 1985.

CONVENTIONAL WARFIGHTING CAPABILITY

We feel a deep sense of responsibility for requesting the resources needed to fulfill our missions. In thinking of the future, the most important mission may well be to provide a conventional warfare fighting capability that is credible for deterring any adversary from starting a major war. Although the United States must maintain a nuclear deterrent capability for the foreseeable future, nuclear warfare is far more horrible to contemplate than any other type of warfare, and we need to exert our utmost to assure it never happens. If the United States does not have a credible deterrent in conventional warfare, we feel the probability of a major nuclear war is increased.

Uses of Technology

Performance to meet threat.
Reduce manpower and cost.
Easy operation and maintenance.
Easy support.

We can improve the credibility of our conventional warfare deterrent by using high technology to provide the performance needed to meet the threats, reduce manpower and cost, make Army systems easier to operate and maintain, and to make those systems easier to support. We need to learn how to do this far more effectively than we have in the past.

Our Army can expect to find itself outnumbered by a Soviet adversary. Our success in overcoming the strength of numbers will depend in large measure on the quality and effectiveness of our equipment. The threat posed by the ever-increasing quality of Soviet weapons dictates a need to accelerate our modernization effort lest we continue to be faced with simultaneous deficiencies in both quantity and quality.

Senator **Goldwater**. Let me interject there if I may. Yesterday morning's Washington Post, in my opinion, very wrongly interpreted a meeting we had here last week where the question of the readiness of our forces came up. Several members of this committee, unfortunately, in my opinion, made the statement that the Soviets would rather face our forces of 1980 than our forces of 1983, and I pointed out that modern equipment, is not the total basis on which to judge readiness of forces. Personnel I think is equally important.

Would you agree that your Army is better equipped today to fight a war than it was 3 years ago, forgetting the item of new equipment?

Dr. **Sculley**. Clearly we are. We are clearly better equipped, which is my major area of responsibility. There are many other factors in the quality of the force, superior training, that have taken place during that period also.

General Wagner, from the Deputy Chief of Staff for Operations and Plans, I think is even better equipped to respond to that question than I, sir.

ARMY EQUIPMENT STATUS

General **Wagner**. Yes, sir. The reason that they indicated we were in worse shape at the end of 1983 than we were in 1980 is primarily because they were basing it on a rating system that measures numbers of people and things at a given time. However, if you look at the people aspects in 1980, we were short 9,000 noncommissioned officers, which are really the core of our fighting force. At the end of 1983 we were short 2,300; at the end of 1984 we will be short zero in that particular area. The number of high school graduates has gone up about 64 percent in that same time.

But even in the area of materiel, one of the problems we run into is a rating system that gives a division an opportunity to say that they are not in a position to be rated when they are transitioning to a new organization. For example—two of the divisions that were rated nonready were in Europe at the end of 1983. They were rated nonready because they were in a transitional mode from an old organization to a new one, but they practiced their alerts and they could go to war at any given time.

We have added over a dozen M1 battalions to our fighting force since 1980. We put in three M2 fighting vehicle battalions.

Overall, the Army is in much better shape in materiel, in organizations designed to fight that battle, and in people, than we were in 1980.

Senator **Goldwater**. Thank you very much.

You may proceed.

Dr. **Sculley**. The tank, attack helicopter, and fighting vehicles are but three examples of a growing list of systems where the Soviets have moved ahead of us in quality in addition to quantity. Considering the technological capability of this great Nation, we find it totally unacceptable for us to allow the Soviets to field better equipment. Fortunately, the resources to correct this qualitative imbalance have been available.

Additional Hardware

1,606 M1 tanks; 918 Bradley fighting vehicles; 477 Black Hawk helicopters; 6,400 Stingers; 82, MLRS; over 6,600 5-Ton trucks; and 3,899 commercial utility cargo vehicles.

Today we have quantities of weapon systems that are a direct result of the additional funds you started providing in fiscal year 1981. As of January 31, this year, there are 1,606 M1 tanks accepted; there are 918 Bradley fighting vehicles accepted; there are 477 Black Hawk helicopters accepted. The 500th will be accepted later this month. There are 6,400 Stinger missiles accepted. There are 82 MLRS launchers accepted. The attack helicopter is in production and being accepted. The fiscal year 1984 contracts have been negotiated within the budget.

RESERVE COMPONENTS

It is important to note that our modernization effort also applies to the Reserve component. The National Guard and Army Reserve units are receiving and will continue to receive new and improved systems that cover the full spectrum of our mission needs. A battalion of the North Carolina National Guard began receiving M1's in July 1983. The same unit has also received their complement of the cavalry version of the Bradley fighting vehicle. Other items such as Roland and Stinger air defense systems, utility helicopters, and upgraded Cobra helicopters are being issued to reserve component units.

USES OF TECHNOLOGY

Some contend that our new systems are too complex and sophisticated. Unfortunately, these terms are often mistakenly used synonymously. Our RDT&E program is structured to blend together these two terms. Complex translates to complicated, and what is complicated in terms of operation or maintenance is to be avoided. Sophiscated equipment, on the other hand, takes advantage of the best features of advanced technology. Such sophisticated equipment can be made easy to maintain and operate.

For example, I think most of us can remember when computers came out and they were really in the purview of scientists, mathematicians, and engineers. Today the computer is a common piece of equipment in many homes and certainly common in the classroom. Today's home computer is certainly a sophisticated piece of equipment, but although it is complex because of its microcircuitry and software, it is accepted as very commonplace. Its operation is fast, simple, and accurate, and repairs are normally based on simple modular replacement concepts.

We have been attempting, and we continue to try to apply the same logic in developing our military systems that range from a relatively simple laser rangefinder to the automatic search and track radar of the Sergeant York division air defense gun. Our objective is to use the best features of technology to obtain greater simplicity for the operator and maintainer while achieving greater capability.

We also use technology to bring about a synergistic effect on the battlefield. This is because we have found in the combined arms sense that the capability of our weapons used in combination is greater than the sum of their individual capabilities.

In the fiscal year 1985 RDT&E budget request, we allocate approximately 16 percent of our research and development funds to the technology base. Recognizing the enormous technology support in the academic community and in the commerical industry, the Army has chosen to focus its technology base on those areas of specialized military need. Selection of which research and development projects to fund is based upon an assessment of enemy threat, Army developments in tactics and doctrine, and an analysis of how and when the technology can be applied to Army systems.

The importance of an adequate research and development program, in my view, has seldom been greater. Today the Soviet Union supports roughly twice our effort in military R&D and at the same time graduates approximately five times as many engineers from its school system. The quality of their weapons has continued to improve because of their past R&D investment, and due to the size of the present program, we in the United States are now faced with the additional risk of technological surprise.

With your support, we will prevent that from happening.

ACQUISITION INITIATIVES

We are taking several steps to improve our management. I would like to spend a few moments to talk about our initiatives to strengthen the acquisition process.

Acquisition Initiatives

Acquisition strategy: timely planning and alternative strategies.
Emphasis on competition: improved performance and competition advocates.
Spare parts.
Unpriced contractual instruments—policy prohibition.

We must be alert to acquisition problems that are not only program related but are indicative of problems fundamental to our basic acquisition policies and procedures. All too often, a problem comes to my attention at a time when few alternatives exist if the program objectives are to be achieved. If better up front planning had been effected, those problems could have bene avoided.

For this reason, I have insisted that detailed acquisition strategy planning be effected during the weapon system development phase, while alternative strategies can be meaningfully considered and properly implemented. Competition, multiyear procurement, tailoring of specifications and standards, design-to-cost, cost benefit and trade-off assessments, preplaned product improvements, value engineering, industrial modernization incentives, and other techniques are used, as and when appropriate to enhance quality while reducing production, operating, and support costs. Additionally, standardization, commonality and interchangeability are promoted throughout the acquisition cycle to reduce lead times and acquisitioin costs. These policies have recently been restated and emphasized in acquisition management regulations.

In the area of competition, the Army had increased its competition performance from slightly over 37 percent of a smaller budget in 1980 to over 41 percent in 1983. Additional management attention to reduce the number of sole source procurements is largely responsible for this increase. We have established at our buying commands competition advocates who challenge sole source procurements.

I will not dwell here on our efforts in the spare parts program. Much will be said elsewhere on that subject. Let me just say that our management emphasis will also enhance our competition performance. All acquisitions of items in excess of $10,000 will be reviewed for competition, including a review of the technical data for that item and an analysis of the alternatives in the acquisition approaches that could be followed.

Additionally, last August I issued a policy directive prohibiting the use of unpriced contractual instruments without specific advanced high-level approval. Much to our dismay, the Army Auditor

General review of Army acquisition practices revealed an unhealthy overdependence on the use of unpriced orders. Unpriced instruments cannot be utilized for individual procurements in excess of $3 million without the individual approval of my office. This policy assures that unpriced contractual instruments will only be used when fully justified and where management of them can be properly executed.

I believe these and other initiatives we are following will improve our stewardship of the funds entrusted to us through better program execution.

Today's Army is one of professionalism and quality. With your continued support, we will be able to continue the efforts that have started over the past 3 years. Collectively, these efforts assure us of a better Army for both today and tomorrow.

Before turning to Lieutenant General Merryman and General Wagner for the balance of our presentation, I would also like to note with your permission, sir, that this is the last of General Merryman's and my joint appearances before this subcommittee. As you pointed out, General Merryman has announced his plans to retire effective this summer after over 33 years of distinguished service, and I might add, in the infantry, armor and field artillery branches, a rarity.

What his biography does not clearly show is that General Merryman served two tours in Vietnam during the height of the war. Both tours were in full command of U.S. Forces in combat. He has had extensive command of U.S. soldiers in war. As a battalion commander, he personally flew daily combat missions in support of ground forces in unequivocally the most intensive helicopter combat activity of the Vietnam war. He personally planned and executed Operation Yellowstone, which ranks still as one of the largest air mobile operations of the Vietnam conflict, and perhaps the largest in Army aviation history. General Merryman is truly one of the Army's pioneers in optimizing the use of rotary wing aviation as weapon and utility platforms on the modern battlefield, and he will be sorely missed in the Army.

The good news, sir, is that we will have some continuity here in that General Wagner has been nominated to succeed General Merryman as the Deputy Chief of Staff for Research, Development, and Acquisition.

Senator GOLDWATER. I would echo your feelings for the General. I had occasion to watch him throughout most of his career, and many people think of me as an Air Force person, but my first commission was on the battlefield. I have always respected it, and I always have great respect for the man who has been in command of ground troops.

General, we don't like to see you leave. If you change your mind, no one is going to be angry if you decide to stay.

General MERRYMAN. Thank you, sir.

Sir, before I start my rundown of the systems which you have asked for, I have asked General Wagner to give you a short briefing of what the Army has been doing since we were over here last time. I am sure you have heard about the light division initiative and several other things, and he will now bring you up to speed on what we have done.

Senator **Goldwater**. There is one general question on which you might not touch, and I have to really apologize for asking the question because the factory happens to be in my backyard. How is the competition coming for a second engine source on the Abrams tank?

ABRAMS SECOND ENGINE SOURCE

General **Merryman**. There is a study being conducted, Senator Goldwater, the report of which will be sent to Congress this month. Right now we are waiting upon some additional information from one of the companies, and shortly we will have that report over here and tell you what we think we should do.

Senator **Goldwater**. Will that be an Army report?

General **Merryman**. The Army has conducted the study, sir. My understanding, it goes through Secretary Weinberger.

Dr. **Sculley**. It was requested of Secretary Weinberger. We have had the major input for him, sir.

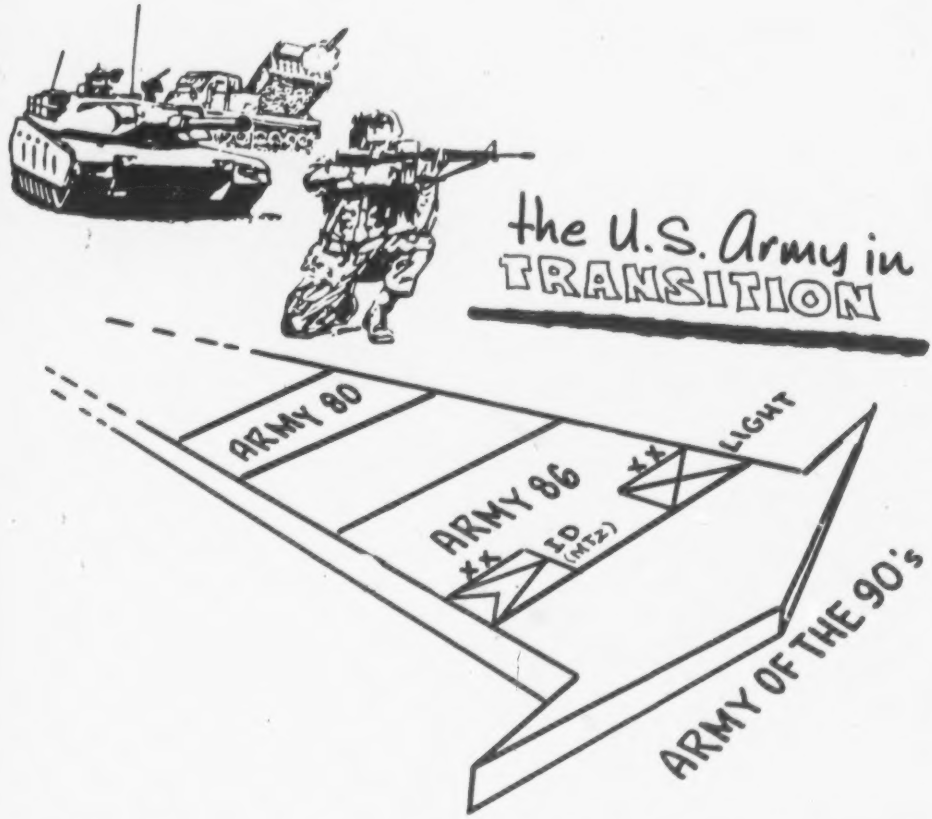
Senator **Goldwater**. Will it be available in time if the Army feels it is good, for us to include any moneys that might be needed to implement a second source?

Dr. **Sculley**. Yes, sir. We feel that its submittal, originally scheduled for March 12, but slightly delayed, will still be timely in nature.

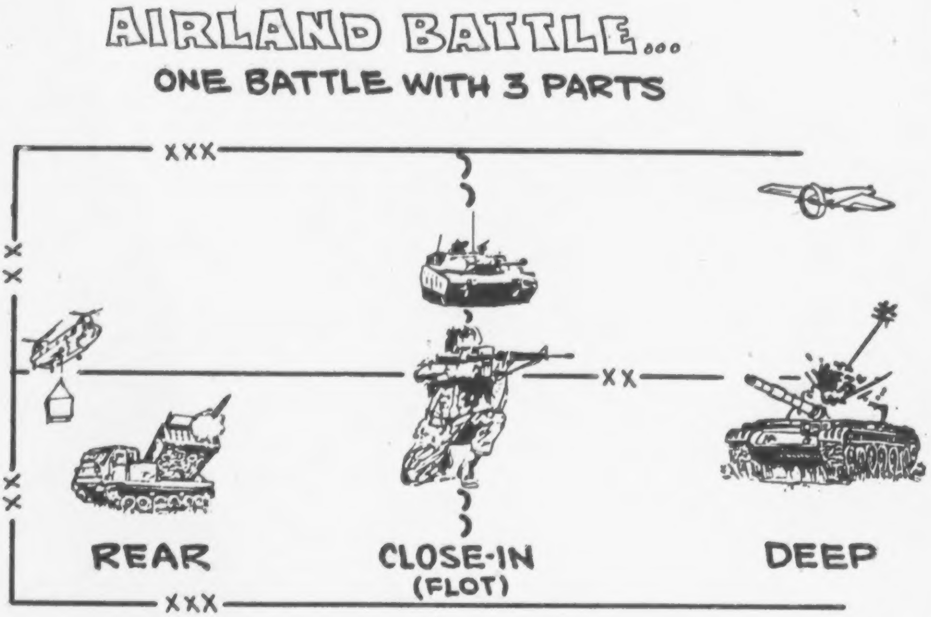
Senator **Goldwater**. Thank you.

STATEMENT OF MAJ. GEN. LOUIS C. WAGNER, JR., DIRECTOR OF FORCE DEVELOPMENT, OFFICE, DEPUTY CHIEF OF STAFF FOR OPERATIONS AND PLANS

General **Wagner**. Mr. Chairman, last year I had the opportunity to brief you on the Airland battle and what we were doing on the doctrine side of the Army to make sure that we properly utilized the modern equipment to its maximum advantage, both in the tactical sense and also in the overall theater sense of fighting that battle.


the U.S. Army in
TRANSITION
ARMY 80
ARMY 86
XX
ID
(MTZ)
XX
LIGHT
ARMY OF THE 90's

Today I am going to just touch on that, but I want to tell you where the Army has been progressing since that time as it continues in a period of transition both on the heavy side and on its lighter side.



You will remember that the Airland battle, as I pointed out last year, is really a continuum from deep in the enemy's rear to the close-in major battle which we call the forward line of troops, and in our own rear. If those three parts of the battle are not synchronized, the unit is not going to be successful. Unfortunately, too often in the past it concentrated on this battle, which is still the key battle, and forgot about the deep battle and the rear battle. It was very defensive in nature.

If we are going to win on the modern battlefield, and if we are going to take the maximum advantage of our equipment, we feel that we should put maneuver back into that battle, and that is really what the Airland battle does.

Senator GOLDWATER. That's the Russian concept, too, isn't it?

MANEUVER CONCEPT

General WAGNER. Yes, sir. I would say that the maneuver concept is the Russian concept. It is very close. The maneuver concept was our concept in World War II. Unfortunately, when we developed tactics during the midsixties, we were greatly outnumbered, we didn't have the equipment to go on the offensive, and we took a defensive posture. We seemed to forget that maneuver is the key to battle. We brought that back with the M1 tank and the M2, the AH-64 and some of those pieces of equipment we are getting today.

Senator GOLDWATER. Isn't that the general thesis of your new manual 100-15, is it?

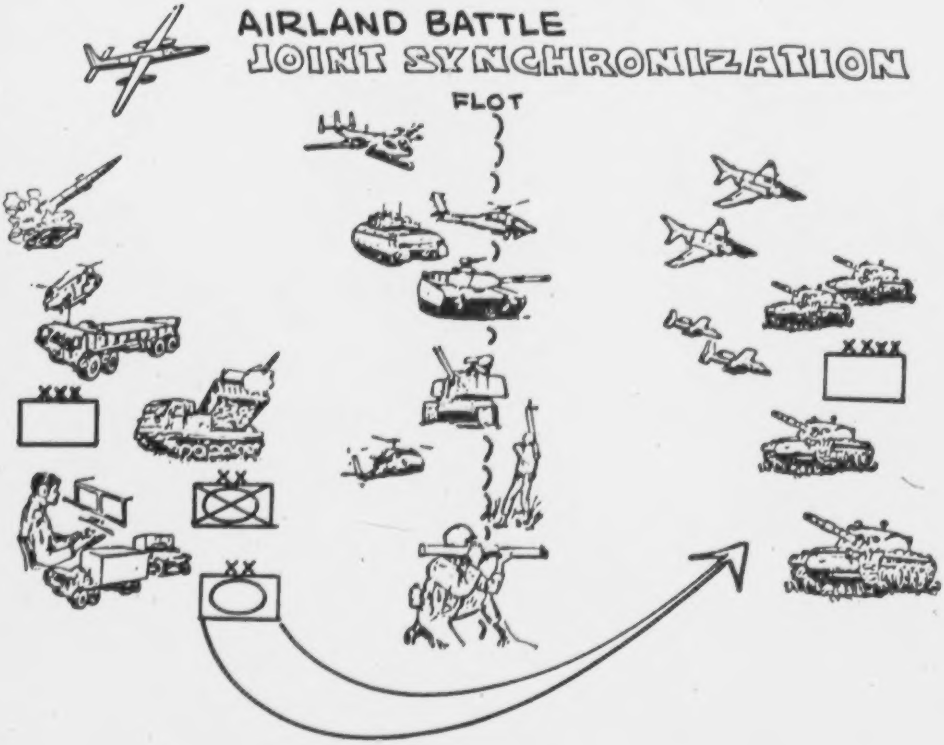
General WAGNER. Field manual 100-5, sir, that's correct.

Yes, sir, that is really the bible on the Airland battle. Quite obviously it doesn't go into the detail of how every unit is going to fight that battle, but that is done in the centers and the schools of our training and doctine command, and then exported to the field so that everyone has that same level of learning, and use of that doctrine and those same tactics in fighting the battle.

Senator **Goldwater**. That is an excellent publication. I remember when General Starry was writing it, we used to be in pretty close touch on what it was doing because the old one, I think, was written by General Custer.

[General laughter.]

General **Wagner**. What I will do is touch on how the pieces of equipment that are in our budget are actually tied into the Airland battle.



The corps commander, who is really the orchestrator of the Airland battle with the divisions that he has under his command, has a very complicated job. First of all, he has to track the enemy, and he needs such capabilities as the Air Force sensors that feed into Army headquarters and our own Army sensors to find out what that enemy is doing in the rear and how he can react to that. If he doesn't have that information he is not going to be able to maneuver his troops in time in order to shape the battlefield.

Really, the entire basis of the Airland battle is to allow us to shape the battlefield, to fight on our conditions rather than allow the enemy to fight on his conditions.

We will still fight our critical battles at the forward line of troops. That is where the soldier on the ground is going to hold his ground, and destroy the enemy. He is going to do that primarily with direct fire weapons such as the AH-64 attack helicopter, the

M2 infantry fighting vehicle and M3 cavalry fighting vehicle, the M1 tank, our Sergeant York antiaircraft gun, our utility helicopters, and when it really gets down to the final battle, it is probably going to be the infantryman on the ground with his handheld antitank weapon that is going to stop that enemy.

Senator GOLDWATER. I didn't see the Sergeant York included in your written list.

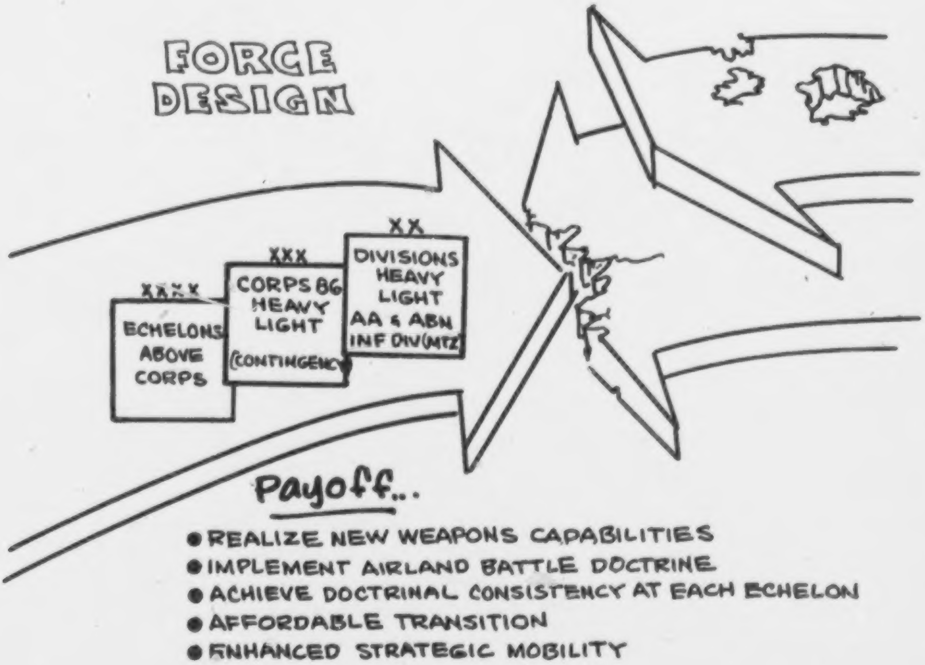
I am just wondering, is that progressing as well as it was?

General MERRYMAN. Sir, I will cover that, Senator Goldwater, I will cover it in depth later in the hearing.

Senator GOLDWATER. Fine.

FORCE DESIGN

General WAGNER. May I have the next chart?


FORCE DESIGN
XXXX
ECHELONS ABOVE CORPS
XXX
CORPS BG HEAVY LIGHT
(CONTINGENCY)
XX
DIVISIONS HEAVY LIGHT
AA & ABN
INF DIV(MTZ)
Payoff...
● REALIZE NEW WEAPONS CAPABILITIES
● IMPLEMENT AIRLAND BATTLE DOCTRINE
● ACHIEVE DOCTRINAL CONSISTENCY AT EACH ECHELON
● AFFORDABLE TRANSITION
● ENHANCED STRATEGIC MOBILITY

When we looked at what was going on in our Army since last year, we saw that we have emphasized too much attention to the heavy side. There was a good reason for that because after the wind-down of the Vietnam war, we really hadn't looked at the heavy side and had not improved it for many years. If there is a key battle that we must win to prevent the destruction of the United States, it is going to be that heavy battle probably in central Europe. However, that is not the most likely war, and as a result, we said we have to look across the spectrum of our fighting force in the army, look at those designs, and see if they are taking the maximum advantage of our equipment and also look at what the probability of war may be.

Also, we must not only look at the divisions, but we have to look at their support in the corps, and then we examine echelons above corps.

Now, we have been involved in the last year and a half in an intensive study of this entire area.

ARMY DIVISIONS AVAILABLE FOR DEPLOYMENT

	Today	Fiscal year 1985
Armor	6(2)	6(2)
Mechanized	7(1)	7(1)
Infantry division (mtz)	1(0)	1(0)
Infantry	8(5)	7(5)
Light infantry	0(0)	1(0)
Airborne	1(0)	1(0)
Air assault	1(0)	1(0)
Total	24(8)	24(8)

Senator **Goldwater**. I think when you are preparing these pictures again, you might consider changing that last one because it doesn't necessarily depict what you have been talking about.

General **Wagner**. Yes, sir.

Senator **Goldwater**. That is, it looks like you are going to have one attack on the enemy and smash him. You ought to show going through the center, the rear and all of that.

General **Wagner**. Well, I went into great detail last year, and I was just trying to summarize it quickly this year. But I do understand. I have a complete scenario for that if you are interested in it, sir.

Basically what we have to work with in the Army are these divisions we have in the Army today. The total number is 24, and what you see in parentheses are in our Reserve components. So we have 16 active components and 8 Reserve component divisions of various size. We have armored divisions, mechanized, and a motorized division which is our former 9th High Technology Light Division. I am going to talk about that in more detail in just a minute.

Senator **Goldwater**. How long will it take you to call up those eight Reserve divisions?

General **Wagner**. Sir, all of them have various deployment dates. Some of them have to be into that battle in 30 days or less. Some of those do not deploy in the first 90 days of the war. It varies according to when they will have to be in the battle.

There are reserve units that are roundout for our active forces and are required to deploy within the first 15 days of the war, to be there on D-Day and fall in on their POMCUS equipment. So it varies by what their mission is during that deployment schedule.

On the right side of the screen you see what will be our deployable divisions in 1985. I put them as deployable divisions so this could be an unclassified document. We will actually have in 1985 an additional division because we are going to activate a division in our Reserve components by combining three brigades into a division. It will not be deployable, however, until about 1986 to 1987.

Senator GOLDWATER. Is that where you will pick up the one infantry division that you are going to lose?

General WAGNER. The one infantry division that is changing we are not actually losing it, sir. It is going to become a light infantry division. I am going to talk about that organization just a little bit later.

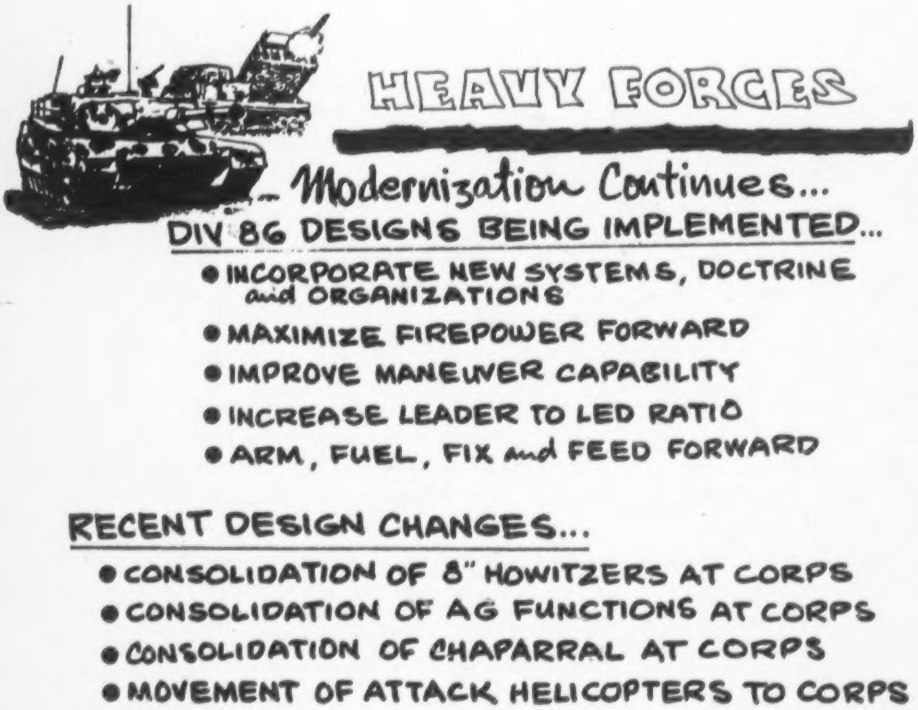
We will also be activating in 1985 another light infantry division. Again, it is not on this chart because of classification. It will be ready for deployment [deleted]. So we will actually be adding two divisions during that timeframe.

Senator GOLDWATER. Will you be discussisng the ten thousand smaller division force?

General WAGNER. Yes, sir, I am going to discuss that division.

Senator GOLDWATER. The 10,000.

General WAGNER. The 10,000 man light division, yes, sir.



HEAVY FORCES

...Modernization Continues...

DIV 86 DESIGNS BEING IMPLEMENTED...

- INCORPORATE NEW SYSTEMS, DOCTRINE and ORGANIZATIONS
- MAXIMIZE FIREPOWER FORWARD
- IMPROVE MANEUVER CAPABILITY
- INCREASE LEADER TO LED RATIO
- ARM, FUEL, FIX and FEED FORWARD

RECENT DESIGN CHANGES...

- CONSOLIDATION OF 8" HOWITZERS AT CORPS
- CONSOLIDATION OF AG FUNCTIONS AT CORPS
- CONSOLIDATION OF CHAPARRAL AT CORPS
- MOVEMENT OF ATTACK HELICOPTERS TO CORPS

I would like to now look at each of those divisions to see where we are going.

First of all, if you will remember last year, when we discussed the heavy division we said that we were designing that particular division to make maximum use of our new equipment and our new systems, by changing the doctrine and by changing the organizations, and we are still doing that today. We are going to maximize firepower forward, improve its maneuver capability because of the new equipment coming in, and increase the leader-to-led ratio. We found that studying wars, looking back on our own wars, and looking at what the Israelis have done in their wars, that those units that do well are the ones that have a high leader-to-led ratio. It is the skillful leader, either the lieutenant or the sergeant that leads his platoon or leads his squad that is ultimately responsible for the success of the battle.

We also wanted to be able to arm, fuel, fix and feed forward so that we could add maneuver to the battle and keep the unit moving in the forward area as we attack into the enemy positions.

As we looked at our forces and looked at the problems we had in the Army as far as end strength, we considered if there is any way that we can use economy of scale to still maintain the capability of the heavy divisions, but also to reduce them in size to some extent. It has been the feeling of Congress over the last several years that we should not increase our end strength, that we should depend more and more on the Reserve components. Although we have been budgeted in various years for an increased number of people in the President's budget, we haven't gotten that additional end strength from Congress. So the decision was made this year to flatten our end strength at about 781,000, then look at our entire force structure and see how to get that maximum capability based on that end strength.

Senator **Goldwater**. I have two quick questions.

General **Wagner**. Yes, sir.

Senator **Goldwater**. What is the range of that 8-inch howitzer?

HOWITZER RANGE

General **Merryman**. I think it is about 30 kilometers.

General **Wagner**. Well, it is over 20 kilometers, sir. I will look that up for you and provide it in just a minute.

What we have decided to do, then, in economy of scale is to consolidate our 8-inch howitzers, which were formerly general support of the division, at the corps level. The corps commander needs the capability to influence the battle, and about the only way he can do that is with firepower in the indirect mode from his artillery or from his attack helicopters. So we tried to help him in that particular area.

RESERVE COMPONENTS

Senator **Goldwater**. The other point I wanted to ask you can't be answered quickly. I think we will call a meeting sometime to have a good round table discussion on the emphasis being placed on Reserve forces. I have been a member of the Reserve and of the National Guard, and I have to say I have some rather grave doubts about the advisability of putting all the strength and emphasis on the Reserve components.

Would the Army be amenable to such a discussion having no bearing on legislation, just sort of a bull session on what you guys really think about the dependence?

We are hearing more and more on the Guard and the Reserve, and I can tell you, having served in the Guard, it is about the most powerful political force that there is. I remember getting in the Guard and being able to walk in the commander's office in my civilian clothes and "raise cain," but in the Reserve I could never do that.

So I would like to find out where this thing sits. I don't want to become a part of overemphasis on something that we are not going to benefit from.

General WAGNER. Sir, we would be happy to do that.

Senator GOLDWATER. Would you be willing to do that?

General WAGNER. Yes, sir. In fact, sir, we have been conducting a major study of what is the capability of the Guard and Reserve to do their jobs. As you have just pointed out, we worry particularly about some of the maneuver elements that must be ready to deploy and fight in early days of the war. It is not that they don't have the desire and not that they don't have the equipment, in many cases, but it is the minimum amount of training time they have in a given year to bring them up to that level of our Active component forces that is the problem.

As you also know, there are units that are very good and there are units that are not that good because of the great differences we see in leadership.

But we would be glad to accommodate you in your request.

Senator GOLDWATER. There is great difference in quality of equipment. I remember one Guard artillery outfit had 5-inch shells and 2 weeks training.

Now, the Navy is about the only one that has ever paid real attention to the Reserve forces.

We will set up a meeting just to toss that around.

General WAGNER. Yes, sir.

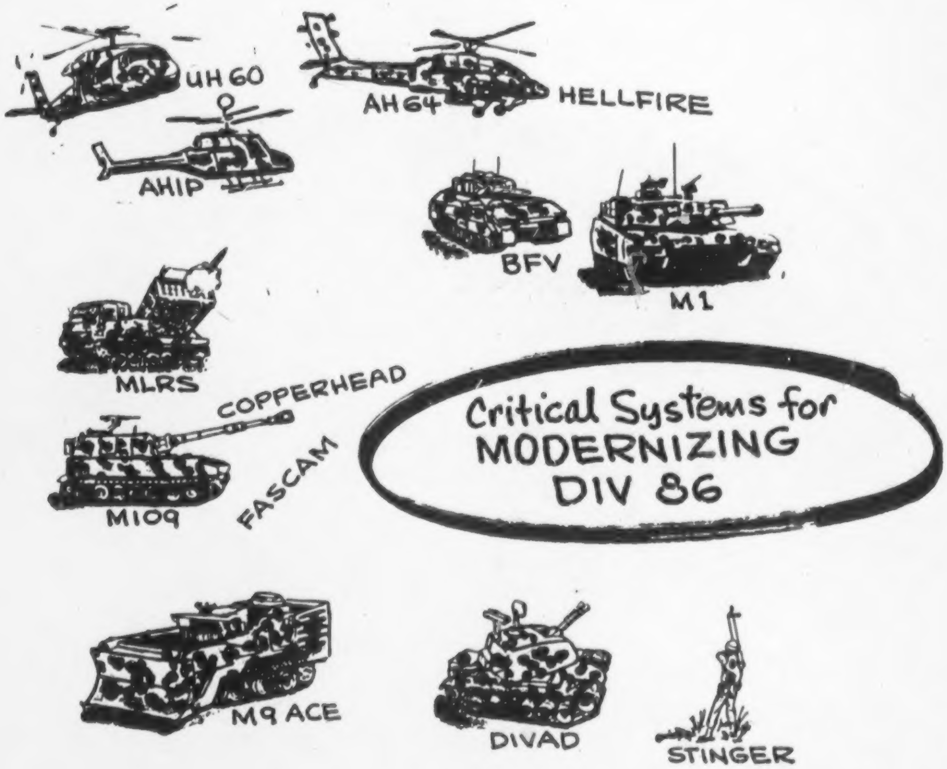
I would point out, sir, that that was true in the past, but today we are giving them modern equipment, particularly those early deploying units, and we are giving them about the same amount of ammunition to come up to speed and do necessary training as we are giving to our Active Forces. We have been doing that for about 5 years now.

FORCE DESIGN

Another item that we are consolidating at corps in order to take some of the pressure off the division in the administrative areas are our adjutant general activities. They can handle this at the corps level, and by handling it, they are reducing the number of people to keep the admin records particularly in these days of computers and so forth, for those divisions.

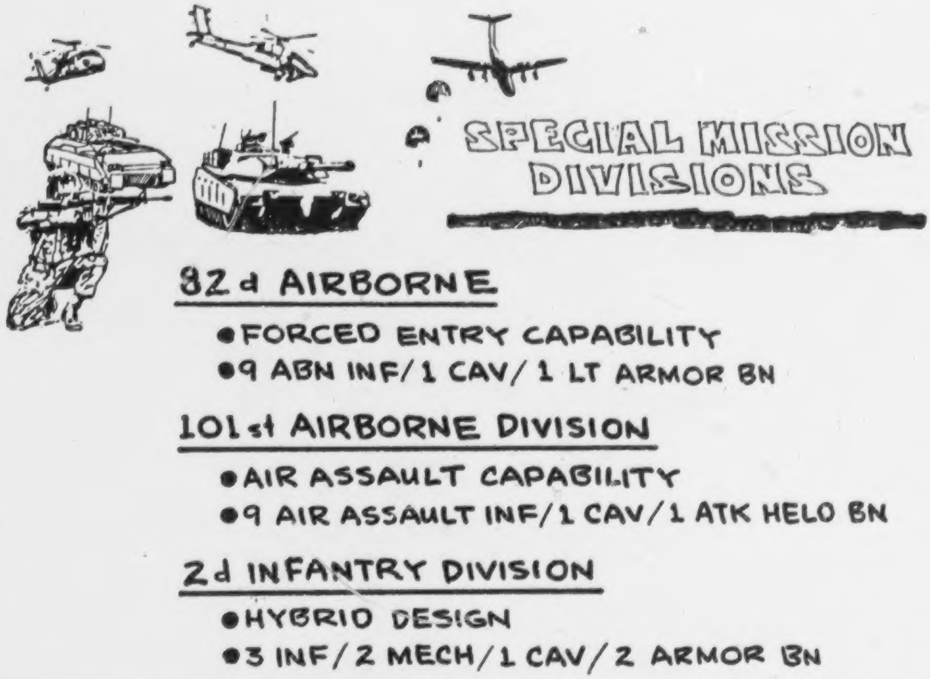
We are consolidating our air defense Chaparral units at corps because they generally are operating in the division rear areas, and this way the corps commander can use them not only to protect the divisional assets but to protect the corps assets.

Finally, we are moving some of our attack helicopters to corps, not all of them. We will still have authorized in our divisions two attack helicopter battalions, and then at the corps, with a mix of Active and Reserve components, anywhere from four to six attack helicopter battalions, depending on the corps.


UH60
AH64
HELLFIRE
AHIP
BFV
M1
MLRS
COPPERHEAD
Critical Systems for
MODERNIZING
DIV 86
M109
FASCAM
M9 ACE
DIVAD
STINGER

These are some of the critical systems that we need for modernizing our heavy divisions. I discussed these on the Airland battle overlay. The one you see here that wasn't there in the AHIP which will give us the scout helicopter to operate with our AH-64, some of our modernized weapons such as Copperhead for our 155 millimeter howitzer, which gives us a smart mission capability; the FASCAM mine system so that we can canalize that enemy into the areas where we want to fight.

If you look at some of the less glamorous items, you will find the armored combat earthmover, which is an engineer vehicle, very essential, however, in the mobility and countermobility capability within a division, particularly with a lot of mechanized equipment.



SPECIAL MISSION DIVISIONS

82d AIRBORNE

- FORCED ENTRY CAPABILITY
- 9 ABN INF/1 CAV/1 LT ARMOR BN

101st AIRBORNE DIVISION

- AIR ASSAULT CAPABILITY
- 9 AIR ASSAULT INF/1 CAV/1 ATK HELO BN

2d INFANTRY DIVISION

- HYBRID DESIGN
- 3 INF/2 MECH/1 CAV/2 ARMOR BN

We also have some special purpose divisions. You are quite familiar with the 82d Airborne Division, which is our primary forced entry division. Also supplementing this division we have our Ranger battalions which give us a forced entry capability, and some of our special operating forces. This division will remain in our forces. Over time we will probably consider some modification in the internal organization of it, but it will remain in the current timeframe as you see it here, with nine airborne infantry battalions, a cavalry squadron, and a light armored battalion.

The 101st Air Assault Division is another among our special purpose forces with its many helicopters and its air assault capability. It will probably be modified over time also. However, at the current time it has nine air assault infantry battalions, a cavalry squadron, and an attack helicopter battalion.

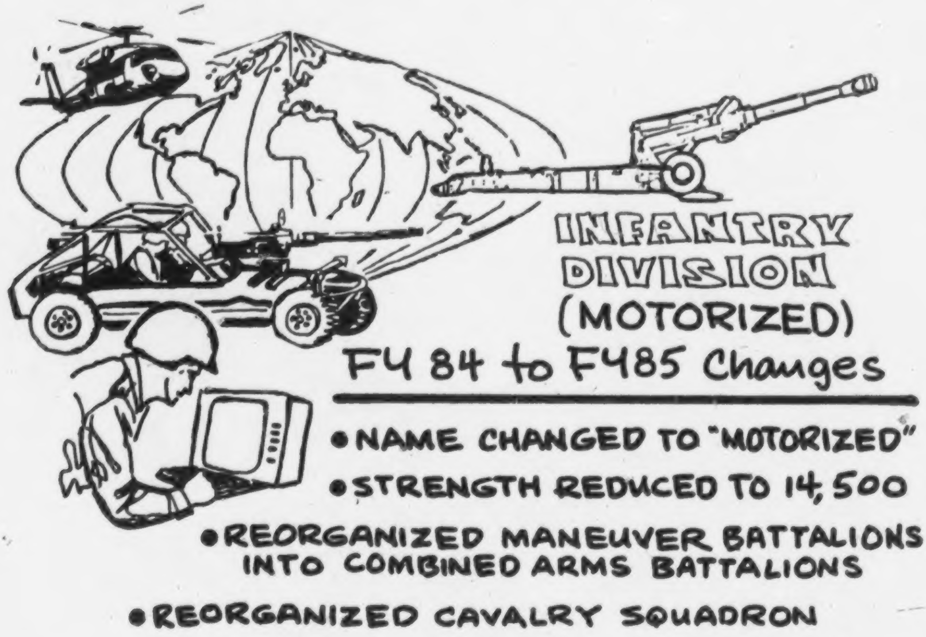
Finally, we have a hybrid special purpose division in Korea because of the tactics and the war that they may have to fight there. It is currently composed of three infantry battalions, two mechanized infantry battalions, a cavalry squadron and two armored battalions. While it has three brigade headquarters, it does not have a full complement of battalions for three brigades and would have to be filled in wartime. In peacetime it is filled out, however, with Korean forces to give it a full capability.

Senator GOLDWATER. Let me ask you a question.

Does this new, 10,000-man division change any of these plans, or have these plans made it any more difficult or easier to create the 10,000-man division?

General WAGNER. It will not have an immediate effect on these special purpose divisions. Over time we may standardize within our infantry battalions, for example, with the same organization they have in the light division as we test it and as we see it is more effective. However, because it is a smaller division, it has allowed us to come up with the additional forces to form an additional division. I am going to discuss that in a little bit more detail in just a minute, sir.

Senator GOLDWATER. All right, fine.



INFANTRY DIVISION (MOTORIZED)

FY 84 to FY85 Changes

- NAME CHANGED TO "MOTORIZED"
- STRENGTH REDUCED TO 14,500
- REORGANIZED MANEUVER BATTALIONS INTO COMBINED ARMS BATTALIONS
- REORGANIZED CAVALRY SQUADRON

General WAGNER. The 9th Division in Fort Lewis, Washington, as you well know, during the last several years has been called a high technology light division. We are getting now into the final design of that division, and because of its mobility on the battlefield, the name has been changed to Infantry Division Motorized.

LIGHT DIVISION

In 1986 we plan on filling out that division with the equipment that it has been developing over the years, and then let it train to fight with the doctrine that has been developed for it. Its strength has been reduced from over 16,000 to about 14,500. A very unique concept we are looking at is a reorganized maneuver battalion that combines the infantry and the assault capability of the division into what we call a combined arms battalion.

On the battlefield today we generally combine infantry units and armored units in our heavy division. What we have done in this division is combine similar capabilities, although they are not riding in tanks and they are not riding in infantry fighting vehicles, they are riding in fast attack vehicles and assault vehicles. We have combined those together so that they can train on a daily basis in the fashion that they are going to fight the war.

It is my personal view that over time we may see such a concept in many of our other forces, too.

Senator GOLDWATER. Would you supply for the record a comparison of your reorganized maneuver battalion with the either present or past battalion?

General WAGNER. Yes, sir; I will do that.

[The information follows:]

COMPARISON OF REORGANIZED MANEUVER BATTALION

The High Technology Motorized Division's combined arms battalion has increased anti-armor (156 systems versus 49), improved mobility (178 vehicles versus 123), and enhanced communications (195 items of equipment versus 92) capabilities, but fewer personnel (516 versus 758) than the previous infantry battalion organization.

CAVALRY SQUADRON

General WAGNER. Finally, we have reorganized the cavalry squadron to give an equal capability for ground cavalry action and for air cavalry action, a mix of attack helicopters, scout helicopters, and ground vehicles so that they can operate 24 hours a day around the clock.

Senator GOLDWATER. When are you going to give up the word "cavalry?"

General WAGNER. Sir, as a former Chief of Armor and Cavalry——

Senator GOLDWATER. Most of you were.

General WAGNER. It will be a hard time.

Senator GOLDWATER. I doubt that many of you could hoof a horse today.

General WAGNER. Sir, I imagine if the cavalry still had horses, I would have gone in the infantry since I am not a great horseman. But really, it is a concept of fighting, a mobile concept of fighting rather than what you are equipped with today.

Senator GOLDWATER. OK.

INF. DIVISION
MOTORIZED
IS
NEEDED

- SWA/EUROPE ARE VITAL AREAS OF INTEREST
- INF DIV (MOTORIZED) IS *ONLY* LIGHT DIV OPTIMIZED FOR SWA/EUROPE

Design Goals...

- FIREPOWER *APPROACHING* HEAVY DIVISION
- DEPLOYABILITY *GREATER* THAN HEAVY DIVISION
- MOBILITY *GREATER* THAN LIGHT DIVISION

also...

- INF DIVISION (MOTORIZED) WITH ADEA DEVELOPS ORGANIZATIONS, DOCTRINE, and HARDWARE

General WAGNER. In fact, Senator, some people have thought that the 9th should be called a cavalry division because of the capability it has.

Senator GOLDWATER. They die hard.

General WAGNER. Yes, sir, they do.

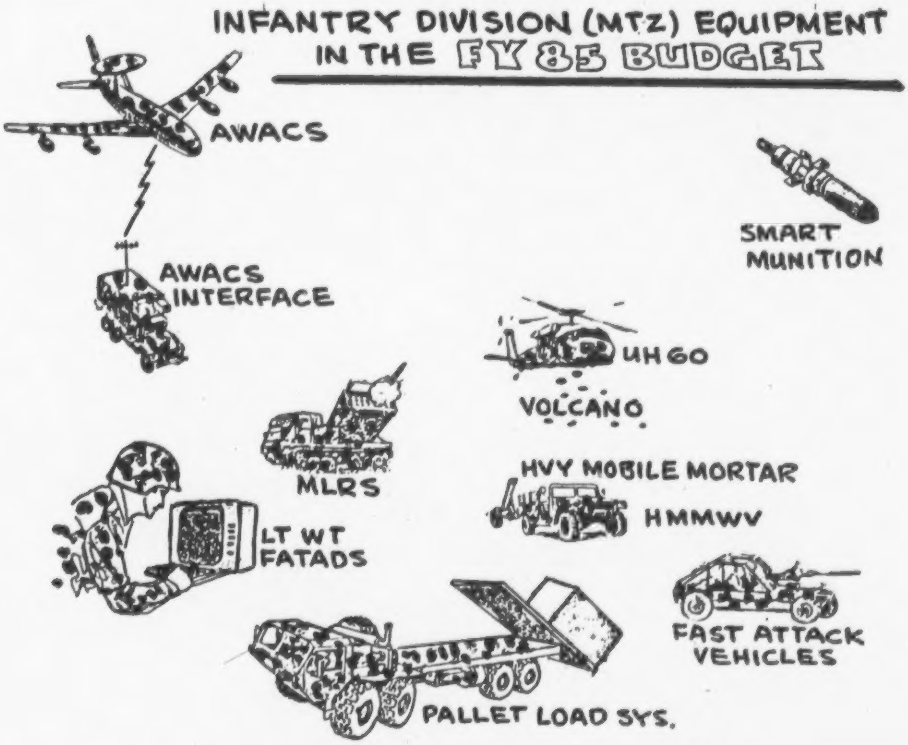
Finally, we have said, why do we need such a division? There have been people that have challenged us and they have said if you are going to the 10,000 man light division, do you still really need a high technology motorized division? We believe we do. It has been optimized for fighting in Southwest Asia and Europe, which are two of our areas of vital concern. It is our only light division optimized for that particular area. Our others, as you will see a little bit later, would have to be reinforced if they were to immediately go into that area in a mid to high intensity conflict.

Our goals as we put it together were to give it the firepower approaching a heavy division. We didn't get there, but we did give it more firepower than we had in our light division. We wanted to have it more deployable than our heavy divisions. We have met that goal, again, not as deployable as you would need it for rapid reaction around the world, and that is the reason we have gone to our light division.

Finally, mobility, greater than a light division. It has achieved that because everyone in that division moves in some sort of vehicle about the battlefield, whether it is a fast attack vehicle, a helicopter, or a truck. They can move and move rapidly.

ADEA

A key organization that I am going to discuss in just a minute that has helped us in the design of this division is our Army Development and Employment Agency [ADEA].


INFANTRY DIVISION (MTZ) EQUIPMENT
IN THE FY 85 BUDGET
AWACS
SMART MUNITION
AWACS INTERFACE
UH 60
VOLCANO
MLRS
HVY MOBILE MORTAR
HMMWV
LT WT FATADS
FAST ATTACK VEHICLES
PALLET LOAD SYS.

The items that we have looked at in this division, are rather unique and we think they will have application throughout the Army. They include an interface between AWACS and our ground forces, so we can get that information with that direct interface that we were not able to get before. They have even looked at the capability of AWACS to track helicopters. We can do that by changing the radar capability, although it loses some of the capability for high performance aircraft then and we have to make a tradeoff in that particular area.

We are looking at lightening up many of the things we find in our divisions today. For example, we have a TACFIRE system for managing our artillery fire. We are looking at how can we come up with a lighter weight field artillery tactical data system so that we can move it rapidly about the battlefield. We are looking at some innovative logistics items. The palletized loading system that you see defined here is really almost like a Dempster dumpster, but it has tremendous capability in the Army because we can cut down on the number of prime movers we have and still move a lot of items of logistical support about the battlefield, and you can even put the command post and so forth in the vans and then drop them off.

Our fast attack vehicle is a concept we have looked at for moving about the battlefield quickly. We are going to apply that in some of our other divisions.

We are looking at heavy mortars that we can tow about the battlefield in that division. We are looking at a new mine dispenser from our UH-60 helicopter so that we can put those minefields in very quickly in a division that doesn't have some of the heavy minelaying equipment that we have in our heavy divisions today.

And finally, we are looking at smart munitions such as guided munitions for our 4.2 inch mortars.

Senator **Goldwater**. One question before you leave there.

General **Wagner**. Yes, sir.

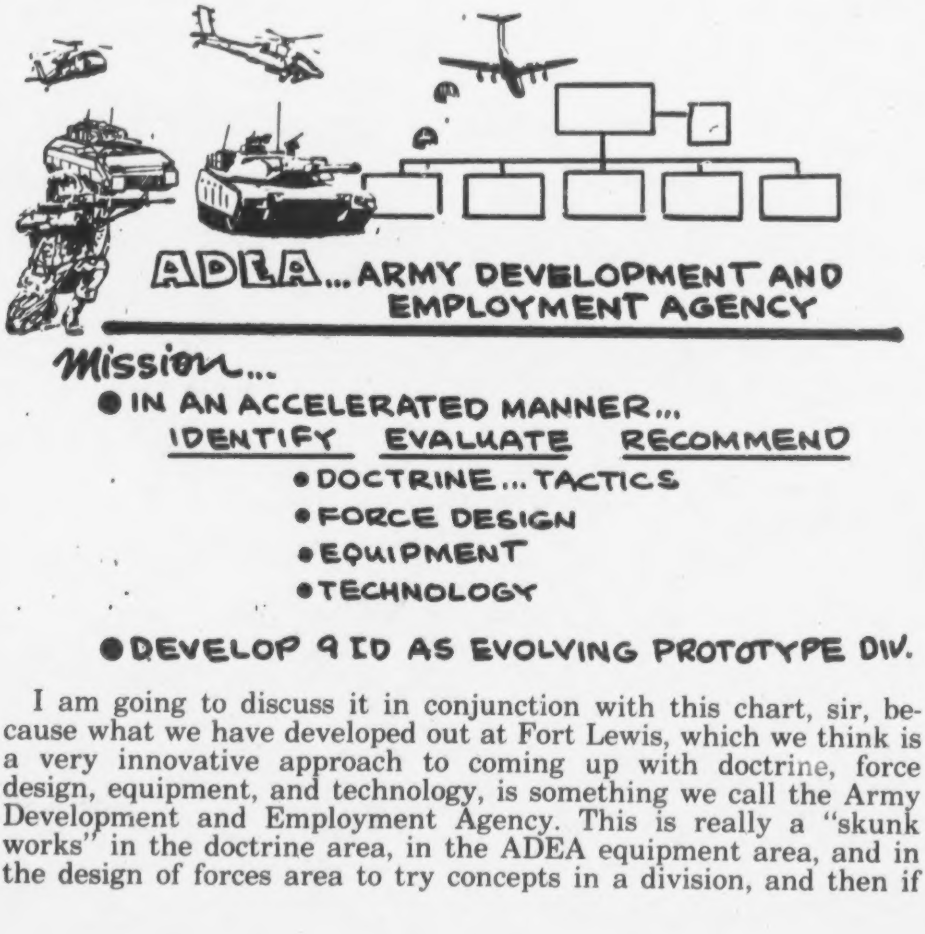
Senator **Goldwater**. I know the Army is very interested in remotely piloted reconnaissance aircraft.

General **Wagner**. Yes, sir.

Senator **Goldwater**. I don't see that in your display.

Do you plan to use that for battlefield quick information at low level?

General **Wagner**. Yes, sir. We consider that probably one of the greatest deficiencies that we have. In fact, on the next chart is where I was going to to discuss that.



ADEA... ARMY DEVELOPMENT AND EMPLOYMENT AGENCY

Mission...

- IN AN ACCELERATED MANNER...
  IDENTIFY EVALUATE RECOMMEND
  - DOCTRINE... TACTICS
  - FORCE DESIGN
  - EQUIPMENT
  - TECHNOLOGY
- DEVELOP 9 ID AS EVOLVING PROTOTYPE DIV.

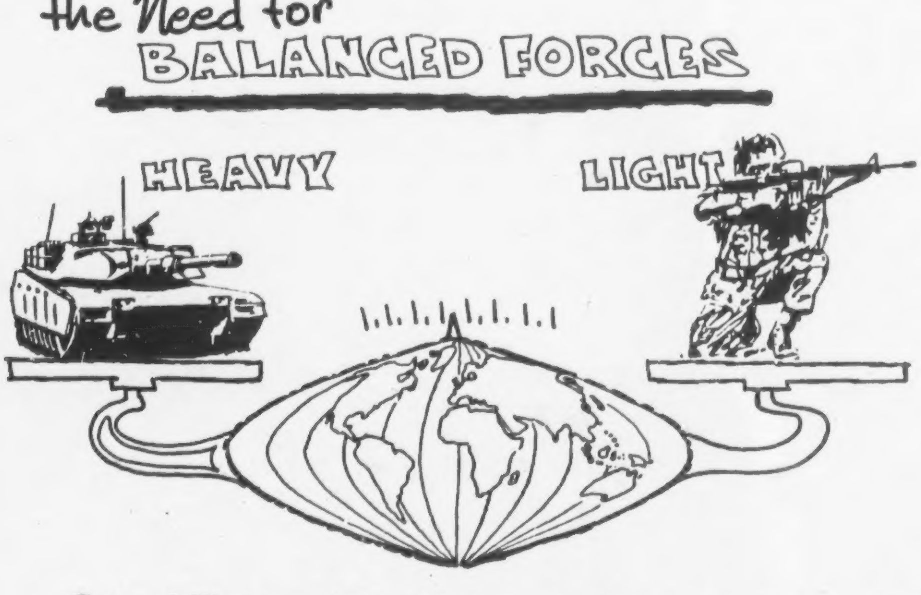
I am going to discuss it in conjunction with this chart, sir, because what we have developed out at Fort Lewis, which we think is a very innovative approach to coming up with doctrine, force design, equipment, and technology, is something we call the Army Development and Employment Agency. This is really a "skunk works" in the doctrine area, in the ADEA equipment area, and in the design of forces area to try concepts in a division, and then if they work, apply them to the rest of the Army. One of the items that ADEA is evaluating today is the Remotely Piloted Vehicle, or RPV. We are not looking only at the standard RPV that is being developed for the Army, but some of the off-the-shelf versions. For example, we have a manned aircraft that is really a surrogate out there today to fly around and test the concepts for the RPV.

We will be continuing to test those in the 9th Division, and this year we will also be moving the first sections of our standard RPV being developed for the Army to Fort Hood, Tex., to evaluate it in greater detail. But it is a key to our intelligence collection on the battlefield, and we want to have it downlinked so that brigade commander and division commander can see what is out there when he has a question and wants to find the enemy very quickly.

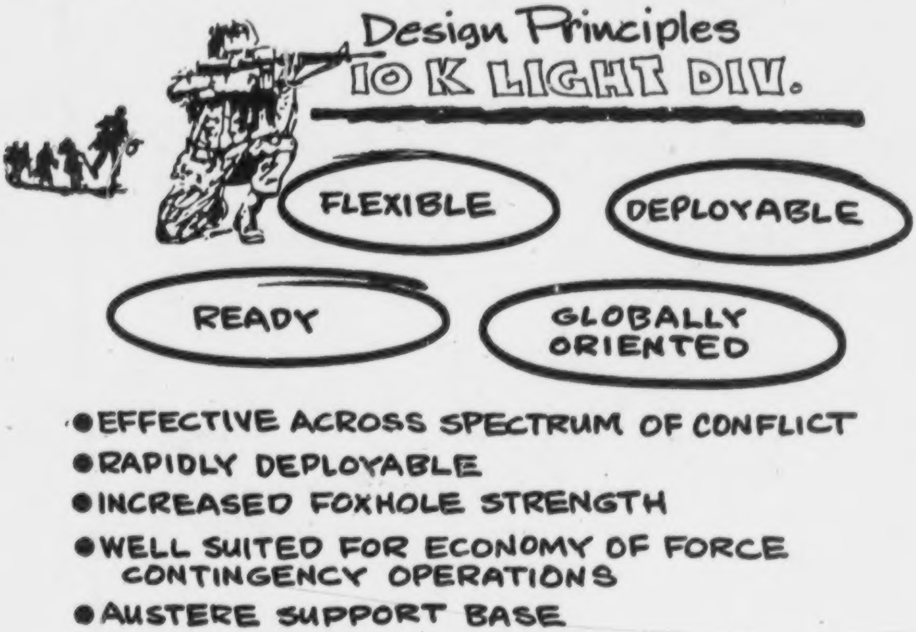
Senator GOLDWATER. I asked that because as we all know, the RPV was very, very successful in the Israeli invasion of Lebanon, not just the out and back version, but the one that could transmit television of what they are looking at. I have seen that vehicle. I swear it looks like something my kids could make in the backyard, but most effective. So I hope the Army is planning the use of this, and it will be available to all command levels, particularly down below.

General WAGNER. Yes, sir, our plan is to have that down to the brigade level. We can actually pass the information to the battalion commanders then, but the key will be in every brigade in our division. They will have a downlink from an RPV that will be giving them information in their area of interest.

Senator GOLDWATER. Thank you.



General WAGNER. As I said at the beginning, when we looked at our number of divisions, we also looked at the probability of actions in the world today. We said we have to get a proper balance between our heavy and light forces so that we can react to those likely contingencies. If you look at the conflicts we have had in the world in the 30 years and we could have gotten there very quickly with a very highly deployable force, we may have put down that problem before it rose to a level that we couldn't handle it without large forces. A good example of that was recently in Grenada.



Design Principles
10 K LIGHT DIV.

FLEXIBLE
DEPLOYABLE
READY
GLOBALLY ORIENTED

- EFFECTIVE ACROSS SPECTRUM OF CONFLICT
- RAPIDLY DEPLOYABLE
- INCREASED FOXHOLE STRENGTH
- WELL SUITED FOR ECONOMY OF FORCE CONTINGENCY OPERATIONS
- AUSTERE SUPPORT BASE

This led us to the conclusion that we needed to look at a more deployable force for our infantry so we could move very rapidly into an area of tension or an area of terrorism, things of that nature, to put down that conflict before it got out of hand. We wanted it to be flexible, deployable, ready, and globally oriented. To make it globally oriented, however, we knew that we could not design a light division with the firepower to fight on the European battlefield or in the Mideast without having additional corps forces to support it. So what we designing is a division which is modular in nature. It will be made up of about 10,000 men at the lowest level. If it is needed in a low intensity conflict, it can go in on its own. If it goes into those other areas, it would be supported, for example, by engineers, artillery, additional attack aviation helicopters, additional air defense and so forth. We are designing the corps at the same time we are designing the divisions so that they will have that capability early in their conversion.

In fact, with our first division, the Seventh Infantry Division that we are forming at Fort Ord, Calif., the First Corps will be designed to test its capability to put in these corps plugs, as we call them, to give it a capability to fight in a global war.

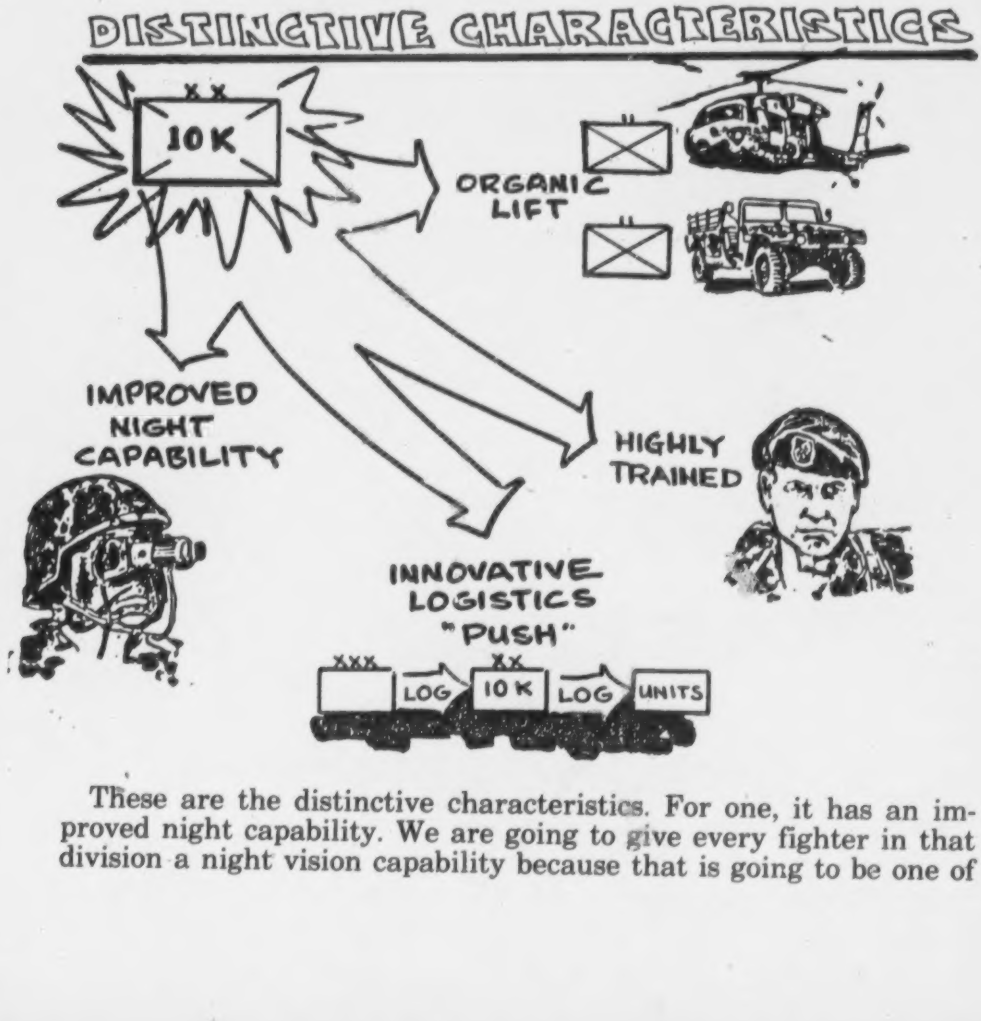
LIGHT DIVISION FLEXIBILITY

Senator **Goldwater**. Let me ask you a question on that 10,000 division, and I do not want to push you on it, I don't want to push the Army on it, but does the flexibility include the availability of rapid change in plans? In other words, is it a fixed 10,000 division capable of fighting, let's say, a Warsaw Pact situation, or could the plans be changed fast enough to allow it to be deployed in the Middle East or Southeast Asia?

General **Wagner**. Sir, it could be rapidly changed, and that is the reason that we are going to train the corps and the divisions together. For example, the 7th Infantry Division will train in a low intensity conflict situation. They will also practice training in a more intensive war, and when they do that, the corps will reinforce them in peacetime, as well as in wartime by tanks, by additional artillery, by air defense and so forth.

In fact, at Fort Ord we are going to have units of that corps, for example, a tank battalion, so that they can train in peacetime in case they have to have that additional capability margin in wartime.

That is very important, that they be able to react very quickly.


DISTINCTIVE CHARACTERISTICS
XX
10K
ORGANIC LIFT
IMPROVED NIGHT CAPABILITY
HIGHLY TRAINED
INNOVATIVE LOGISTICS "PUSH"
XXX
LOG
XX
10 K
LOG
UNITS

These are the distinctive characteristics. For one, it has an improved night capability. We are going to give every fighter in that division a night vision capability because that is going to be one of the places that they can be very effective in fighting a higher intensity conflict if they can have that advantage at night.

Because it has an austere logistics base, we are looking at innovative techniques such as having standardized artillery resupply packages that we can push to them rather than the current pull system in which they always call when it is too late and say I need ammunition. With some of our modern computer techniques today, we can track exactly what they are shooting and then have that prepared to go.

You have heard a lot of people saying that it is going to be an elite division. What we really mean by an elite division is one that is highly trained.

How are we going to achieve this? We are going to be very selective in our company commanders. We are going to be selective in our NCO's and give them additional allocations for Ranger school, for example, so that we can have a high percentage that go through that particular tough training.

On the basis where this particular unit is located, we are going to try to cut down the amount of support that they have to provide to the post so that they can train on a continual basis in the same fashion that our Ranger battalions do today. For example, the Ranger battalion at Fort Lewis does not have to pull the post details that the 9th Division does. So they can train continually and be ready to move out very rapidly.

Senator **Goldwater**. How about the quality of NCO's? Is that necessarily going up?

QUALITY OF NCO'S

General **Wagner**. The quality of NCO's in our army is going up considerably, sir.

Senator **Goldwater**. I mean for this particularly.

General **Wagner**. For this division we will be very selective in those NCO's, and I would have to say you have to be careful about this because you can't take all the best NCO's in your Army and put them in these types of divisions or you are going to hurt the rest of the Army. So we have to get the proper balance there.

But this individual has to be innovative, he has to be able to take care of his men, and he has to be in good physical condition because they don't ride about the battlefield. So if a man has a bad leg, things of that nature, he is not going to be able to make it in this division. So we are going to have to be selective there.

I am happy to say that the caliber of our NCO's today in the Army is better than I have seen it in the entire time I have been in the Army. Part of this is because we have been able to weed out those who are weaker and not even allow them to re-enlist today. Five years ago, when you went on a post, you had quotas to meet for re-enlistment of NCO's. It was very important you meet that quota so you re-enlisted just about anyone to keep them in. Today our quotas are for the quality of the individuals, and if we don't meet that number, as we strive for the quality, it is not a problem. We just have to do that.

Senator **Goldwater**. A few of us are trying to get the terms of NCO's and officers extended. I don't see any sense in a 45-year-old sergeant getting out just because he has to, or his time is up. I think, really a man in the Army, Navy, Air Force, Marines, even in combat, reaches his productive period past the age of 40, not before it. We have proven that too many times. So there are those of us who feel that all of you fellows should spend more time in uniform and not get out too early.

General WAGNER. Yes, sir.

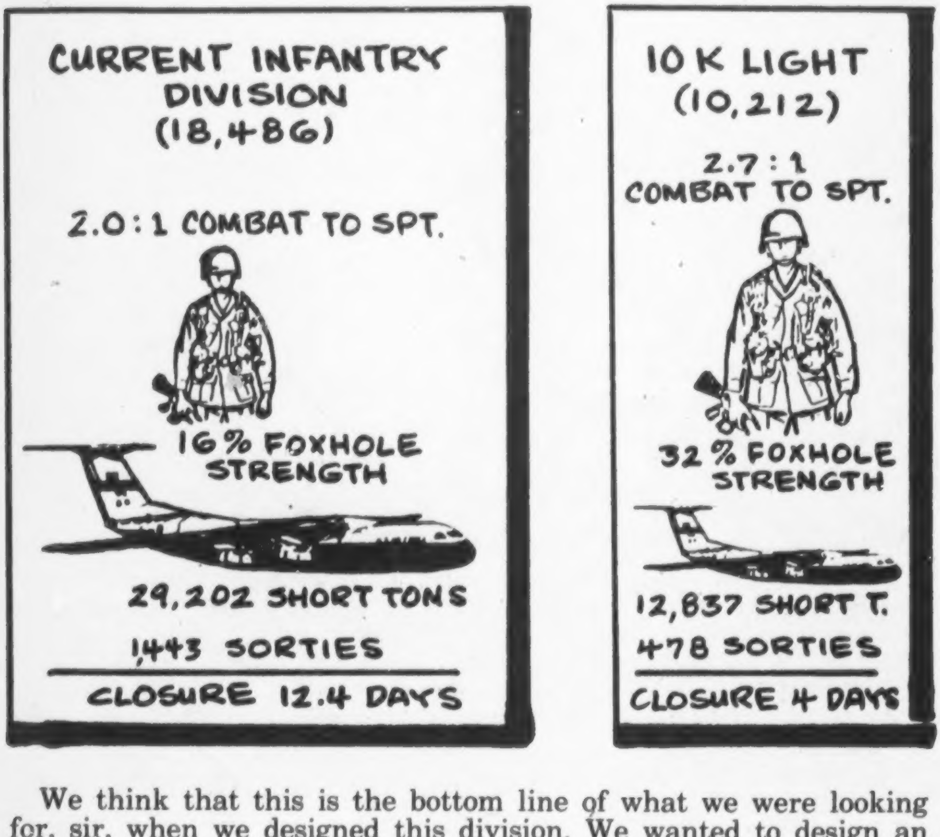
I would agree with you completely on that, sir. Again, we have to look at the particular job some of those individuals are in. At the squad leader level, for example, at the tank commander level, these are extremely strenuous jobs, and it may be that we can't fill all of those slots within the older individuals, in the key leadership position, platoon sergeants, positions of that nature, I think we can keep them in longer periods of time.

Now, we can roll them into those positions as they grow out of those others.

Senator GOLDWATER. You guys are all young, but I will tell you, there is nothing wrong with growing old. I will go out and fly a fighter plane today with the best of them.

General WAGNER. Glad to hear that, sir.

LIGHT DIVISION


CURRENT INFANTRY DIVISION
(18,486)
2.0 : 1 COMBAT TO SPT.
16% FOXHOLE STRENGTH
29,202 SHORT TONS
1,443 SORTIES
CLOSURE 12.4 DAYS
10 K LIGHT
(10,212)
2.7 : 1
COMBAT TO SPT.
32 % FOXHOLE STRENGTH
12,837 SHORT T.
478 SORTIES
CLOSURE 4 DAYS

We think that this is the bottom line of what we were looking for, sir, when we designed this division. We wanted to design an infantry division that had a higher fighter-to-supporter ratio, and we have gone up from about 2 to 1, to about 2.7 to 1. We wanted to have more foxhole strength. Really, foxhole strength is how many men you have on the ground shooting at the enemy with a rifle. In this particular division, although it is 8,000 smaller than the one you see on the left, a basic infantry division, we have 32 percent foxhole strength, and if you really look at numbers we have nearly 300 more riflemen in the 10,000 man division than we had in this 18,000 man division. It is about 3,200 plus as opposed to 2,900 plus.

If we look at the sorties of C-141's that it takes to transport the 10K division into an area, you will see that we have gone down by about a factor of three. We can close this division in 4 days where it would take about 12 days to close this division, for example, in the Middle East.

So we have gotten the deployability we want. Quite obviously, however, if we go into high intensity conflict, it is going to go up because we are going to have to have those support packages. But if we go into many areas of conflict, we could move there quickly, and that's what we were looking for.

Senator GOLDWATER. Do you believe that the C-17 or something like it will be a good addition to your force?

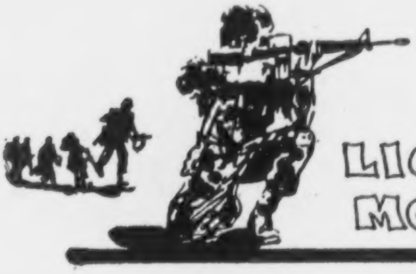
General WAGNER. Sir, we absolutely need the C-17. We need that not only to move these divisions, but we need it to move our heavier divisions and to give them those corps plugs they need if they have to go into areas of higher intensity conflict, and then we don't only need the intertheater, we also need the intratheater airlift to give us the capability to fly forward. We just cannot do that today in many cases, with the C-5.

Light Force RESTRUCTURING

- CONVERT 7 ID TO 10 K DESIGN (LATE FY 84)
- ACTIVATE 17th AC DIVISION (EARLY FY 85)
- CONVERT AC and RC INFANTRY DIVISIONS TO LIGHT INFANTRY DIVISIONS
- SUSTAIN INFANTRY DIVISION MTZ EFFORT

This is our restructuring program. I touched on this earlier. We are going to convert our Seventh Infantry Division at Fort Ord, starting in late 1984. This unit will then be our test unit because we know there may be modifications in fire support and so forth that we will want to build in that division as we are testing it to make sure it gives us the maximum amount of firepower within the limited strength it has. We are going to activate a Seventeenth Division early in 1985. This will be a phased activation, and it really won't be ready for deployment until fiscal year [deleted]. The main reason it has to be phased is if we have a fixed end strength, we can't form it up until we reduce some of the other units down toward the 10,000 man level and take out other of our forces that could be reduced slightly.

We will convert other AC and RC infantry divisions as we study what is the best way to do it and how many more does it look like we need. For example, in our active components we would plan on the next division being the 25th Division, which is currently in Hawaii. We don't have a specific timeframe for that. We are going to sustain our motorized effort at Fort Lewis, Wash.



LIGHT DIVISION MODERNIZATION

- HMMWV
- M16A2
- NIGHT VISION EQUIPMENT
- MOBILE HEAVY MORTAR
- GAMP
- LT FATADS
- FAST ATTACK VEHICLE
- MK 19 40mm MG
- SMALL EMPLAC'MT EXCAVATOR

These are some of the pieces of equipment that will go into the light division. We are asked constantly, "Now that you have designed all of the pieces of equipment you have in your Army, are you going to come in and tell us you need a lot of new equipment for this light division?"

I can tell you today, sir, we are not going to need a lot of new equipment for this division. We just need the same type of equipment that we have needed for our other divisions. However, we think we are going to package it in a form that will give us greater capability.

For example, this is our high mobility multipurpose wheeled vehicle, the same vehicle that we are going to put in the rest of our

Army. The M16A2 is the improved M16 rifle. We are buying that for the rest of the Army also. In fact, our first buys will be in fiscal year 1984.

Senator GOLDWATER. Who is making that rifle?

M16A2 RIFLE

General WAGNER. I believe that is Colt, sir.

Senator GOLDWATER. Colt?

General WAGNER. It is Colt, yes, sir.

Senator GOLDWATER. Is it a modification of the M16?

General WAGNER. Yes, sir. It has a heavier barrel, a more durable stock, a different sighting system. It is just a better all-around rifle.

We had a problem, for example, when our Rangers jumped into Grenada at low altitudes. A number of them damaged their rifles. We have known that the M16 is fragile, so the first units that we are going to issue this rifle to are going to be our Rangers and our airborne.

Senator GOLDWATER. Are you going to use the same bullet?

General WAGNER. It will use an improved round that we have in our squad automatic weapon system. It has a different twist in the barrel which will increase its range and accuracy.

Senator GOLDWATER. How about the rate of fire?

General WAGNER. It has the same rate of fire, but it also has what we call a three-round burst capability so that it will automatically shoot a three-round burst to give the firer better killing capability.

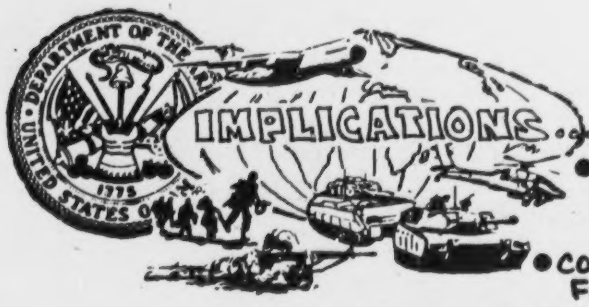
Senator GOLDWATER. Good.

M19 MACHINE GUN

General WAGNER. I have talked about the night vision equipment and our mobile heavy mortar. One other item that I haven't talked about is the Mark 19 40-millimeter machine gun. This was developed in ADEA for the 9th Infantry Division. So there has been a direct flow out of that division into this light division.

SMALL EMPLACEMENT EXCAVATOR

The small emplacement excavator is an engineer item of equipment that is bought right off the shelf. It gives a capability to the light engineers for digging and the clearing of obstacles that they need in a light division like this.



IMPLICATIONS... AN ARMY WITH

- GREATER STRATEGIC UTILITY FOR TOTAL FORCE
- CONTINUED HEAVY FORCE MODERNIZATION
- IMPROVED TOTAL FORCE BALANCE (HEAVY-LIGHT) ACROSS SPECTRUM
- ADDITIONAL AC LIGHT DIVISION
- ENHANCED NON DIVISIONAL LIGHT FORCES (SOF-RANGER)
- CONSTANT END STRENGTH
- AN AFFORDABLE PROGRAM
- INCREASED PLANNING FLEXIBILITY
- ADDED DETERRENT VALUE

Summing it up, sir, what the Army has continued to do during the last year is to refine our forces; refine the design of those forces to get the maximum capability from our equipment. We are looking at greater strategic mobility. That is our 10,000 man light division.

CONCLUSION OF LIGHT DIVISION DISCUSSION

Many people think that because we are talking about the light division we are going to reduce our effort to modernize our heavy divisions. That could not be farther from the truth. We are going to continue to improve those heavy divisions because they will be the key to our success on a heavy, intensive battlefield such as in Europe. We do believe that we have improved that balance between our light and heavy forces. We are going to form a new light division. We are increasing the number of special operations forces; that is our Special Forces and our Ranger units. We have been planning to do that for a long time because they give us a needed capability throughout the world.

We are going to stick at 781,000 end strength. We believe in this program and support it. We have not added additional equipment to do the job. All we have done really is redistributed it within the Army. Finally, we believe it gives us a greater deterrent capability because we can get there faster, put down a problem before it really arises.

That completes what I have to say.

Senator GOLDWATER. Thank you very much. That was very good testimony.

STATEMENT OF LT. GEN. JAMES H. MERRYMAN, DEPUTY CHIEF OF STAFF FOR RESEARCH, DEVELOPMENT AND ACQUISITION, DEPARTMENT OF THE ARMY

General MERRYMAN. Senator Goldwater, 3 years ago when we talked, I had to tell you that the Soviets had equipment in the field that was better than just about everything we had. In this, my final appearance before you, I have put together a short, 11-minute film to show you what we have done these past few years as a result of your help and that of the Congress.

[A film was shown.]

AH-64 HELICOPTER

That is the AH-64, the new attack helicopter with two 1,500 horsepower engines. If you shoot one out, you fly on the other. It carries 16 Hellfire missiles. This is the equipment it will carry. You see rockets, Hellfire missiles. This is the aircraft now flying, and you are going to see it shoot a Hellfire missile. If this was real combat, of course, you wouldn't be up that high, you know, you would be down in the trees. You can shoot that missile up to [deleted]. You can shoot it direct from the helicopter or you can shoot it over a hill and lase the thing you are shooting at with some other system.

This is the 30-mm gun that will go through everything except a tank, a chain gun built by Hughes. We have had phenomenal success with it.

This is now firing a 2.75 rocket. You are familiar with those, sir, for area fire.

Now, you will see them shoot a Hellfire missile over a hill, the missile being lased by some other designator. You can do this in total pitch blackness. You need no light whatsoever. I have flown it, sir, and I think you have, and it is kind of eery, you know, as to what you can do with it. You can see everything just like it is daytime out there.

BLACK HAWK

This is the Black Hawk. These are the same engines that were on the first aircraft I showed you. This aircraft is built like a Mack truck. We crashed one at Fort Campbell some time ago, went down, replaced the blades and just flew it out. It will carry just about anything you can put in it. You will see in a moment, they will put an artillery piece under it, the ammunition and the crew inside.

Senator GOLDWATER. That's an amazing helicopter, you know.

General MERRYMAN. It truly is.

Senator GOLDWATER. It is.

General MERRYMAN. I have flown them since 1952, and this is the first one that has enough power so you don't worry about the tachometer, you know, just going off when you fill it up.

As you can see, that is an example of its power.

Senator GOLDWATER. The first time I flew it, my instructor pilot said why don't you do a split "S"? In a helicopter?

General MERRYMAN. That's right.

Senator GOLDWATER. We did, and it handled beautifully.

M1 ABRAMS

General **Merryman**. That's your M1 Abrams tank, sir.

I have done that in that tank, and it is hard to believe, it looks like you would be bouncing all over the place. You are very stable. Here we are shooting at it with two tank rounds. That is the second one. Now we are going to put it over one of our biggest mines. And now we are going top ride that tank off.

This is honest. You are going to see now, if you look, you will see they had to shorten the track. The track is split. Some of the optics were destroyed. But that's a fightable tank, and that crew is alive. Now, they are awake, I will admit, but they are alive.

Now, what you are going to see here, sir, is the stabilization which is the most phenomenal thing. Here is what the gunner sees. Here is what the tank commander sees. We are getting better hits with this tank on the move than we are with our old tanks sitting still. The soldiers love this tank. It is probably, in all honesty, our greatest success story this year, nearly 1,700 produced, and everybody is amazed at what this thing is teaching us. The commanders are learning, it gives them a way to move in battle at a rate of speed that they can't believe, and the soldiers are learning they have got something they can count on.

This just shows you some of the firing sequences.

Senator **Goldwater**. Are you still using the finned projectile?

General **Merryman**. Some of the projectiles are, yes, sir.

This, now is the Bradley. Senator Goldwater, this is the infantry and the cavalry fighting vehicle that will go with the tank. You notice its maneuverability is the same as the tank's. I have done this also in this vehicle. They are just phenomenal as far as their stabilization.

You can move this out over, you know, rough terrain and have no problem at all. You can see some of the shots there.

It has the 25 mm Bushmaster that will go through anything but a tank. It has a TOW on it, which will go through the tank. It has infantry in the bank which you can sic on tanks.

I will show you some more in a moment. Now we will show you the stabilization of this gun which we are very pleased with. You will see in a moment the stabilization on the move. That's the gunner, and it will go through anything that you are seeing.

This is the vehicle moving into what I call an overwatch position, and it has the TOW's, two TOW's, and it will now proceed to shoot one of those TOW's. This is, you know, up to 3,750 meters. So with this vehicle you can just do all kinds of things. You can sit behind a hill, shoot the tanks at 3,750 meters.

In addition to that, you can shoot them with a Bushmaster up to 2,000 meters, and if you get closer than that, to the enemy, you can sic the infantry on them.

Senator **Goldwater**. What is the range of that wire-guided?

General **Merryman**. 3,750 meters.

This is now, you can see the crew in the back of the Bradley. Now you are seeing the portholes on the sides in case you, you know, got into the midst of the enemy, then you can shoot out the sides, you wouldn't be surprised.

This now is what we call the FISTV. That is a laser designator on top. You have an artillery fire support here. They are going to direct your artillery, but right now what we will do with that is shoot a laser beam on an enemy tank. Then we will take a Copperhead round, an artillery round that you can put into any of our 155's and shoot that sucker out to 16 kilometers and it will home in on that laser beam that that first vehicle you saw was shooting against that vehicle, and it will penetrate anything that they have got today.

Here is another shot that will show you the devastating power effect of that round.

This is the MLRS, the Army's first rocket launcher since World War II, with a crew of three. As you will see, there are two six packs up there; each one of those 12 rockets up there contains 644 submunitions that will go through the top of the lightly armored vehicle or explode and would wound or kill anybody in a room this size or about twice this size, as a matter of fact.

This just shows you that if two out of the three members of the crew were wounded, one member can handle it. One member can load it, he can fire it, he can drive it. We are very pleased with this. We used what we call a skunk works approach to bring this system on. It cut several years off the development program, much like it did with the Sergeant York.

Senator GOLDWATER. Have you furnished any National Guard outfits with this yet?

General MERRYMAN. No, sir. I can find out when we will. The answer is no, not at this time.

Sir, this is the Pershing that you have been reading about in the newspapers. Now, what I want to show you here is why the Soviets are so concerned about this. You are going to see this thing shoot, and I am going to show you how accurate it is. They go out to 1,800 kilometers and achieve an accuracy of [deleted] and as it comes down, you will notice it is correcting itself. You put a little cassette in it before it leaves, and it has really got a picture of the ground where it is going, and as it comes down it maneuvers. I am going to show you where we aimed and where we hit.

You can imagine if you commanded a Soviet airfield or a Soviet command complex how they feel about us, of course, having this capability in Europe.

What you will see now in a moment are two stakes. One is where we hit, the other is where we aimed.

STINGER AIR DEFENSE MISSILE

This is the Stinger air defense missile. This replaces our Redeye. You remember the Redeye of Vietnam days was what we called a tail chaser. That worked well as long as the enemy aircraft didn't hit you as he flew over you. With the Stinger you can shoot at him as he is coming toward you, as he is going by you or, of course, after he has gone by.

Senator GOLDWATER. What is the caliber?

General MERRYMAN. I guess it is about a 5-inch.

Senator GOLDWATER. Four inch?

General Merryman. I think it is about 5, as I recall. I can get you that. I don't know excatly.

This, now, is an application that I was talking about last year where we will put it on helicopters. The Soviets are building attack helicopters like they are going out of style, about [deleted]. They have built nearly [deleted]. We are going to put this in our scouts and our attack helicopters so it gives them an air-to-air capability.

This system, that I am showing you next is our Patriot. Now, what I am going to show you is one battery, one launcher. We are going to shoot at three aircarft at the same time.

Now, you will notice that the top aircraft on the right will blow up, the other two will not. However, if they had been real shots, we would have gotten all three if we had had proximity fuzes.

You will notice the missiles go by, and there is that missile. This is one of the things we need most, of course, because it will replace the thing called Hercules which went to Europe when I came into the Army. In the old days Hercules had the capability of one battery shooting at one aircraft at a time and tracking one at a time. With this system you can shoot [deleted] at a time and you can track [deleted] at a time.

This just shows you the maneuverability.

I am going to discuss all these systems, of course, sir, in more depth, when I finish here and tell you what the status of the programs are.

This is the last system on the film. This is the DIVAD, or Sergeant York. That is an old M-48 tank chassis. The top part is what is new. Those are two twin 40 mm weapons. There are two radars up there that give it its great capability, one that acquires the target and the other one hits the turret. The first radar slews around to the target so that you have the capability to do something in real time.

And this shot just shows that it will shoot down a helicopter, and the next shot just shows that it will shoot down a fixed wing aircraft.

Senator Goldwater. Is that now being field tested by the Army?

General Merryman. Yes, sir.

Senator Goldwater. Where are you doing that? White Sands?

General Merryman. Fort Bliss.

This is one of the radars, and this is just a fixed wing.

This old aviator decided to die hard.

There we go. He died hard.

All right, let us go now to the charts.

SERGEANT YORK

Senator Goldwater. Are you running into any objection by anybody in the Army or the other services relative to the York?

General Merryman. The other services, sir?

Senator Goldwater. Yes.

General Merryman. No, sir, I don't know of any.

Senator Goldwater. I think it is a fine weapon.

General Merryman. The Sergeant York, sir, all we have today in the Army is a thing called Vulcan. That is 1,200 meters. It was an adaptation of an old Air Force weapon. It has never been very good, and to be quite honest, most aviators aren't too afraid to fly in front of them.

The Sergeant York will give you a [deleted] meter capability, and we are now learning, against a hovering helicopter, that you have considerable residual effect out to [deleted] kilometers.

Senator **Goldwater**. The only thing I would change on that is the button for a pilot, as you know, it goes the wrong way.

General **Merryman**. Yes, yes, I agree.

Senator **Goldwater**. The pilot, if you want to go up, you pull it down. If you pull it down here, it goes down.

General **Merryman**. I was out there last summer, and the first thing I said is you guys have got this rigged wrong. And they said you're an aviator, aren't you? And I said yes.

Senator **Goldwater**. That's right. He told me they had no trouble teaching a young enlisted man how to use it, but pilots couldn't learn.

General **Merryman**. That's right because I've been doing it too long the other way.

NEW SYSTEM SURVEY

Sir, what I am going to do now very rapidly is to go through the systems, bring you up to speed on where we are, and let you ask, of course, any questions you would like.

M-1 ABRAMS TANK

This is our Abrams tank. As I told you ealier, we are very proud of what has happened this last year. If you remember this time last year, we were having a problem with what we call power train durability. We had not proven to you that we could go 4,000 miles with a 50-percent probability of reaching that mileage without a failure.

Senator GOLDWATER. You have reached that point though.

General MERRYMAN. Yes, sir. Last year we ran a test, and we not only reached 0.5, but we reached 0.66.

Senator GOLDWATER. You are not satisfied with that, though, are you?

General MERRYMAN. We are going to keep going. No, sir.

Senator GOLDWATER. All right.

General MERRYMAN. You may be aware of a letter, sir, that General Otis, commanding general of all Army forces in Europe, sent to Senator Levin this last year in which he commented on the second report.

ABRAMS TANK (M1/M1E1)

Fiscal year 1985--seventh year of production. 3,328 procured through fiscal year 1984. 11 battalions fielded today (7 in Europe). Proven in Reforger 1982 and 1983. Powertrain durability test successfully completed Dec. 1983. Engine second source study due Congress. Fiscal year 1985 RDT&E completes M1E1 integration. Fiscal year 1985 procurement buys 720 MIE1's (120mm gun).

If you will remember, I told you last year that in Reforger 1982, we had 97 percent availability. In Reforger this last year, we had 98 percent availability, and whereas in 1982 we had extra supplies on hand to make sure that the tank was taken care of, this last year's Reforger was with normal supplies, the maintenance was done by the direct support maintenance countries of the units, and like I mentioned earlier, the normal repair parts and supply system was all we used to support the system.

Senator GOLDWATER. I got reports in Europe consistently of around 96 percent availability, and that is very, very hard to believe. You know, we accept 85 as being very high, but 96, wow.

General MERRYMAN. In the letter sent to Senator Levin, at the end of the 11 day Reforger intensive exercise, we sent 53 Ml's out and all 53 MI's came back. I never saw that happen. I'm an old tanker, too, and I——

Senator GOLDWATER. I hope you can depend on it.

General MERRYMAN. That is phenomenal.

The only other thing, sir, that I would like to mention here is that I told you earlier that I will have your second source study over to you later this month.

ABRAMS FINANCIAL SUMMARY

PROGRAM UNIT COST
(CONSTANT FY85 $)

DEV EST FY76	2.24
FY84	2.63
FY85	2.77

$(000,000)

COST GROWTH

FY84-85	5.3%
TOTAL	23.7%

	FY83 & PRIOR	FY84	FY85	FY86	TO COMPLETE	TOTAL
RDT&E	1051.7	107.4	108.6	87.2	107.1	1462.0
WPN SYS PROC	6135.2	1838.9	1786.0	2033.5	6796.2	18589.8
QUANTITY BUY	2488	840	720	720	2290	7058

$(000,000)

What I am doing here, sir, is I am showing you a chart that I will show you in all systems. This is the one we have used now for 3 years to show you the program unit costs. These are all in constant 1984 dollars. That is what the top left block does, which shows you the original year and where we are today. It then shows you what we are buying in 1985; for example, 720 M1E1 tanks, and on the top right what I am showing you is the cost growth. In other words, this shows you that last year we have had 5.3 percent cost growth in the M1E1 tank. Now, that cost growth in this program resulted from the fact that we are now changing from the M1 tank, of course, to the M1E1, and the M1E1 is more expensive than the M1 tank.

Senator GOLDWATER. Are you having problems with the 120 mm gun?

General MERRYMAN. I am going to talk about that next.

ABRAMS TANK (M1E1)

Lethality improvement with 120mm gun. Survivability enhanced with improved armor and NBC system. Development test II: Oct. 1982-Dec. 1984. Operational test II: Oct. 1983-Apr. 1984. Areas of concern: possible accuracy and turret bustle ammunition storage area. IPR—Mar. 1984. ASARC—July 1984.

We want the 120, as you know, because of the threat. All indications are that the current 105's aren't going to be able to handle it. We have had several assessments this last year as to fightability, you know, is it too big, can you work the thing. All of those assessments have come out good. Our testing agency has said, you know, the vehicle is very fightable, its RAM-D, its mobility, its affordability are okay, there is no adverse effect of the additional weight, but we do have two problems that we are working on. We had one indication there was the possibility of an accuracy problem which we picked up in development test (DT) late last year. We finished that test and are just now conducting OT. However, all the results that we are getting thus far are showing us that the M1E1 gun, the 120, is doing as well or better than the 105. So if that continues, that problem looks like it will go away.

The only remaining problem of substance that I am aware of, sir, that we are working on, is the turret bustle ammunition. What I am talking about there is, for example, if you put all heat rounds, or primarily heat rounds in the bustle that is behind the turret in the rear part, and if you shoot a round into that bustle, you get a fire, and when you get that fire, of course, your tank is essentially gone.

What we have found out is that you have these doors, you know, between the bustle and the turret where the men are. You have about between 8 and 20 seconds between the hit and before you have a catastrophic occurrence; in other words, an explosion which would destroy the tank. What I am saying is it looks like if we didn't do anything, that probably you could take a hit and the men could get out.

We are not stopping there, though. We are looking at ways to improve those doors to make sure heat and gas don't get inside. We are also looking at ways to improve the survivability of the bustle. Everything else, so far as I know, on that tank is a go.

What we plan to do, sir, is to make sure that we are not making any mistakes and that we have all our stuff in order. We have a review later this month before we will commit to the long lead items for the 720 tanks we are asking for with 1985 dollars. And then we have an ASARC [Army System Acquisition Review Council] this summer at which time we will make the full up production decision, and we will have a lot more information of course by then.

General WAGNER. If I may add something, sir, on that accuracy problem. I discussed this with the test officer down at Fort Hood and also with the division commander last Friday. The best thing that they can come up with is when they had this problem at Aberdeen Proving Ground, they were using the wrong technique of fire in doing their zeroing because they have not had this problem since. In fact, they are taking the same crews and running them through firing exercises with the M1, and then with the M1E1. Those same crews are doing better on the M1E1 than they did on the M1. So I think that problem was the technique they used rather than the actual problem with the gun sight.

General MERRYMAN. I made one mistake earlier, when I told you. I said 8 to 20 seconds. I meant 8 to 20 minutes. That is a little different there.

[Chart deleted.]

Now, with our tank program, as I mentioned to you last year, [deleted].

So in order to take care of the [deleted].

This chart shows you the funding for this program. The 1985 dollars are, [deleted] for RDT&E and the $11 million for weapon system procurement.

BRADLEY FIGHTING
VEHICLE SYSTEM M-2, M-3

The Bradley fighting vehicle is the one I talked about in the field with the 25 millimeter Bushmaster, has two TOW's, and either carries infantry or cavalry inside. We have produced over 978 of these, sir. We are producing at 50 a month now. As a matter of fact, we produced 60 last month.

This vehicle has done very well in battalion tests that have been conducted down at Fort Hood. I talked to the division commander that conducted the test this past week, and he is very pleased with the outcome.

Senator Goldwater. Is the engine intake on this in the same location as the M1?

General Wagner. The engine is front mounted in this, sir, and in the M1 it is in the rear.

M1 ENGINE

Senator Goldwater. I know that the M1 picks up more junk. This one gets pretty good air, doesn't it?

Mr. Sculley. Yes, sir.

General Wagner. Well, with the filters that we have on the M1, sir, we have had no problems.

Senator Goldwater. This is what I am talking about. This vehicle, you haven't had the problems with the engine that you have had on the M1?

Mr. Sculley. No, sir. This is a straight Cummins diesel engine versus the turbine engine in the M1 sir. So there is quite a difference in air flow.

Senator GOLDWATER. Who makes that engine?

Mr. SCULLEY. Cummins. It is a Cummins diesel.

General MERRYMAN. We have been very impressed with the mean miles between failures that have been demonstrated by this vehicle. The requirement is 240, and we demonstrated on one test 419, and on another test 334, and no lower than around 260.

BRADLEY FIGHTING VEHICLES (M2, M3)

Fiscal year 1985—Sixth year of production. 2,300 produced through fiscal year 1984. 2D Armored Division at Fort Hood and 1 battalion in Europe fielded. Proven in extensive battalion test. Initial production test completed. Outstanding RAM results in test. TOW 2 subsystem development going well—development test to start May 1984. Fiscal year 1985 RDTE: completes TOW 2 subsystem development and optical improvements. Fiscal year 1985 procurement: 710 Bradleys with TOW 2 capability.

So we are impressed with that.

Now, we have some problems that have turned up as far as the transmission and as far as the integrated sight unit, problems that have been primarily in quality. They are producing those at a sufficient rate so that it has not impacted production thus far, but we are really close, and we are watching it like a hawk.

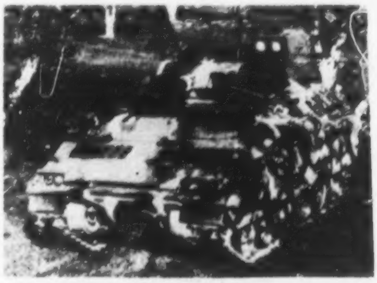
I don't know of any more to tell you than that we are keeping our heads above water. We know the fixes and do not forsee a show stopper with either of the systems.

BRADLEY FINANCIAL SUMMARY

PROGRAM UNIT COST
(CONSTANT FY85 $)

DEV EST FY72	1.03
FY84	1.48
FY85	1.53

$(000,000)



COST GROWTH

FY85	+3.4%
TOTAL	+48.5%

	FY83 & PRIOR	FY84	FY85	FY86	TO COMPLETE	TOTAL
RDT&E	481.4	26.5	16.9	2.2	0	527.0
WPN SYS PROC	2885.4	916.4	1176.9	1322.8	4457.3	10758.8
QUANTITY BUY	1700	600	710	900	2972	6882

$(000,000)

This is the funding chart for the Bradley. It shows, of course, that we have had in the past year a 3-percent price increase or cost growth. This resulted from the fact that we put, if you remember, the TOW 2 integrated sight unit on it, and the production rate was changed or was reduced from 90 vehicles to 75 vehicles per month.

The money for 1985, you will notice, will buy 710 vehicles.

Senator LEVIN. May I interrupt for just a second?

Didn't we have a figure for long lead for 1985, in your funding for 1985?

General **Merryman**. I think you funded—I'm not sure. I think it was 840.

General **Whalen**. Yes, sir, that is right. When we were anticipating last year it would be 830.

Senator **Levin**. Was it 830 that we put in?

General **Merryman**. When we were here last year, we projected 830, sir. We have changed that now to 710.

Senator **Levin**. How many did we put in?

General **Whalen**. I believe it was 840.

General **Merryman**. I really don't know, sir.

Senator **Levin**. Well, why are you cutting it from 830 down to 710?

BRADLEY CUTBACK

General **Merryman**. It is just a matter of affordability. When we put our program together, our budget this past summer, we looked at, you know, what you all could afford, and a decision was made that we had better not go any further than the 710 in this program at this time.

Senator **Levin**. Do you know of Navy and Air Force programs which have been cut back this much from last year's levels?

General **Merryman**. I don't know.

Senator **Levin**. The Bradleys are being cut back, the M1's are being cut back, and there are a number of other cutbacks in production rates from what you put in last year for this year, and what we put in last year for this year.

Do you know of any analogy?

General **Merryman**. I cannot give you any specific Air Force and Navy programs, but I can try to find out for you, though. The answer to both questions, though, Senator Levin, is the same as I gave you. You know, it is where you look at the total.

Senator **Levin**. You are not doing this for quality reasons. You are not doing this because you are not satisfied with the Abrams or the M1? This is purely because you don't have the bucks?

General **Merryman**. Absolutely, sir.

We are very pleased with both of them, Senator Levin, and that is the honest truth.

CONTINUATION OF OVERVIEW

ADVANCED ATTACK HELICOPTER
(AAH) WITH HELLFIRE MISSILES

APACHE ATTACK HELICOPTER (AH-64)

Fiscal year 1985—fourth year of production. 171 procured through fiscal year 1984. Fiscal year 1982 and fiscal year 1983 contracts on schedule and within budget. First production aircraft acceptance Jan. 1984. AH-64s begin delivery to Fort Rucker/Eustis April 1984. Fielding begins May 1985 Fort Hood. First article test Feb.-Aug. 1984. Fiscal year 1985 RDT&E continues test program set development. Fiscal year 1985 procurement buys 144 AH-64s.

This is your Advanced Attack Helicopter. This is the fourth year of production We received the first one on schedule. The second one is due this month. We have had several success stories here which I am pleased to announce to you. As we discussed earlier, this aircraft has won the Collier award, the Collier trophy this year, which is for the most outstanding aeronautics and astronautics program for the past year in aviation, and it will be presented this May 11. The second success has been a plant out in Mesa, Arizona, which, if you remember, 2 years ago everybody was saying "there is no way it will ever work." You can't take a piece of desert and find people who know how to put helicopters together and make them put something as complicated as this thing is together.

Well, that has been shown to be an error, and I can tell you that Mesa has been one of the Army's biggest success stories in the past year. The contracts are on schedule, and as Dr. Sculley mentioned earlier, we have signed the 1984 contracts, and it is within the budget.

We are asking in 1985 for procurement for 144 Apaches.

APACHE FINANCIAL SUMMARY

PROGRAM UNIT COST
(CONSTANT FY85 $)

DEV EST FY76	9.80
FY84	14.80
FY85	14.53

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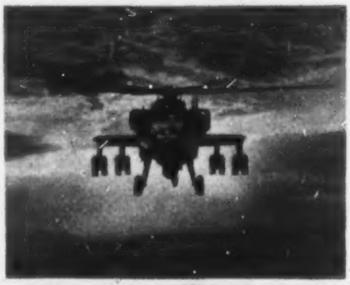


COST GROWTH

FY84-85	-2%
TOTAL	+48%

	FY83 & PRIOR	FY84	FY85	FY86	TO COMPLETE	TOTAL
RDT&E	1171.4	27.8	16.8	11.5	0	1227.5
WPN SYS PROC	1492.7	1360.4	1476.2	1294.3	467.5	6091.1
QUANTITY BUY	59	112	144	144	56	515

$(000,000)

This chart shows you the funding stream and shows you that over the past year the unit cost has decreased. The decrease actually is just due to OSD methodology changes.

Senator GOLDWATER. What is your projected unit cost?

General MERRYMAN. The average unit procurement cost is $11.14 million in 1984 constant dollars.

Senator GOLDWATER. And it is going to stay there?

General MERRYMAN. Sir, let's hope so.

Senator GOLDWATER. Is it?

General MERRYMAN. Well, we are going to do our best to keep it there, I will tell you that. As we told you last year, you know, we are not going to sign a contract unless it is right. We are not going to pay a price that is wrong.

Senator GOLDWATER. If it doesn't stay there, they are not going to get as many bought.

General MERRYMAN. That word has been passed, sir.

Senator GOLDWATER. And you can tell them that.

General MERRYMAN. We appreciate your help.

Dr. SCULLEY. We feel that we have the attention of Hughes and Martin in this case. We have negotiated fixed price incentive contracts within budget.

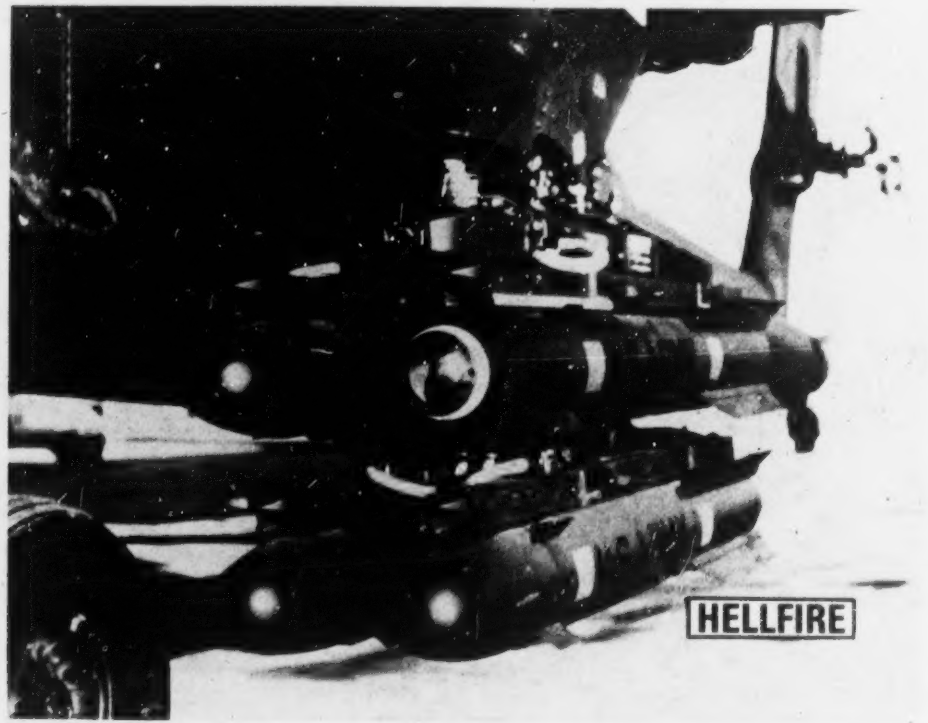
General MERRYMAN. Actually, for the fixed price incentive with Martin, we got a firm fixed price with Hughes, Senator Goldwater.

May I have the next chart, please?

Senator LEVIN. I think the chairman is too modest to say it, but he is entitled to a whole lot of credit for savings. I don't know if it is billions yet, but at least hundreds of millions on this helicopter.

Mr. Chairman, your tenacity on this—you played a little bit of poker with them and it worked.

Senator **Goldwater**. Well, when you tell them you are not going to buy them, and then you don't, that shakes them up.



Senator **Levin**. I think the taxpayers are in your debt for what you have done on this.

General **Merryman**. Sir, I have been involved from the first with you, and I agree with Senator Levin 100 percent.

This is the Hellfire missile that I mentioned to you earlier. It is a laser guided missile that will go up to [deleted].

HELLFIRE ANTI-TANK MISSILE

Fiscal year 1985—4th year of production. 9,302 procured through fiscal year 1984. To be fielded with Apache (4th Q fiscal year 1985). Contractor 1st article test (December 1983) minor deficiencies. Government 1st article test (February–June 1984). Fiscal year 1985 RDTE updates launcher test program sets. Fiscal year 1985 procures buys 6,026 missiles, total buy 48,696.

We are in our fourth year of production. We are in a competitive environment with Martin and Rockwell. This will be fielded with the Apache this June. The program is on cost. We have some minor deficiencies that we found in what we called contractor first article testing. We found that the contractor used the wrong kind of solder to solder some joints. They were water soluble, and we don't know how serious that is yet. He also did some electrical connector coatings wrong and some seeker mount brackets are cracking. I am informed that this will not impact the Apache fielding, and that this will not impact the fielding of this missile with the

Apache, but what it amounts to is we are 61 missiles behind right now.

What I am going to do as I go through is tell you any problem I know about, sir, to try to be as open as I can. In this one I don't think it is major at all.

Senator GOLDWATER. What are you paying for that missile?

General MERRYMAN. Constant average unit procurement costs in constant 1985 dollars, $38,130.

Senator GOLDWATER. How much?

General MERRYMAN. $38,130.

Senator GOLDWATER. That is a lot of money.

General MERRYMAN. It is, sir, until you think of what it will do. You know the exact probability of kill, I forget, but I think [deleted]. So what you are saying is you have [deleted] of hitting what you shoot at, and anything you hit with this missile you are going to get because of the warhead lethality. It is kind of like Copperhead.

Senator GOLDWATER. It is good, but this is the problem with all the missiles we make. They are too expensive. We would be almost better off paying the enemy not to make helicopters than to shoot at them.

General MERRYMAN. I agree, sir.

HELLFIRE FINANCIAL SUMMARY

PROGRAM UNIT COST
(CONSTANT FY85 $)

DEV EST FY75	45.4
FY84	54.1
FY85	47.7

$(000)

COST GROWTH

FY84-85	-11.8%
TOTAL	+5.1%

	FY83 & PRIOR	FY84	FY85	FY86	TO COMPLETE	TOTAL
RDT&E	312.6	0.5	0.5	3.4	18.8	335.8
WPN SYS PROC	410.0	218.6	237.5	241.9	1008.9	2116.9
QUANTITY BUY	4651	4651	6026	6576	26792	48696

$(000,000)

This is the funding stream for Hellfire. It shows that in the past year the unit cost, in the upper right corner, has gone down 11 percent. Now, this happened because we increased the number of missiles we were going to buy. It is not something we did right. It is in one sense: We did not have any cost growth in the program. But we increased the missiles and that meant the unit costs went down.

And the other part figured in that cost growth is, we etended the buy program. We originally were going to buy between 1980 and

1985. We are now going to buy between 1982 and 1990. So when you take that and you increase the number of missiles, you get a reduction in cost. That is what it amounts to. It is nothing specific that we did that we need to be patted on the head for.

The next chart, please.

This is the AHIP. This is the program I know you are all familiar with. It is a modified OH-58 aircraft. That is a mast-mounted sight on the top of it. That mast-mounted site has a laser capability, a television capability, and a forward looking infrared radar [FLIR] for a night capability. We took an OH-58; put a new rotor system on it and put a new engine in it. It has got an air to air Stinger capability on the side there. That is what those tubes are on this side.

And we are very, very proud of how this program is going. This program is on schedule.

ARMY HELICOPTER IMPROVEMENT PROGRAM (AHIP)

Day/night aerial scout/battlefield coordination/target designation.
Uses existing OH-58A airframes, 578 total conversion.
Fiscal year 1983—first prototype flight.
Contractor testing—Dec. 1983-Jun. 1984—meeting or exceeding requirements.
Development test II/operational test II—Jul. 1984-Jan. 1985.
Low rate initial production contract award—Aug./Sep. 1984.
Full production decision—Apr. 1985.
Initial operational capability—Jun. 1986.
Fiscal year 1985 request completes FSD/procures 44 AHIP Scouts.

Thus far, the flight testing at Yuma shows that we are exceeding specs in many cases. The rotor vibration above where the mast is, is lower than expected. We are getting greater speed than we had expected, we are getting greater endurance, and we are getting greater VROC, that is vertical rate of climb, and our television is exceeding specs.

We have no known problems with this. The only thing that is not straight on is the R&D cost for the mast-mounted sight, which is above target but within program. In other words, we have the right amount of money. We wish the costs of the mast-mounted sight R&D effort were, of course, a little lower.

Senator **Goldwater**. There has been some argument, as you know, on this weapon. Do you consider it a marginal weapon or a weapon that you can live without or one that you have to have?

General **Merryman**. Sir, I can not tell you—well, I can tell you how important I consider it to be, in the sense that this weapon will be used with our attack helicopters, of course, to lase for the Hellfire and the Copperhead. It will be used for battle management, to run the battle out there for aviation units. And if we did not have it, the only thing you would have is the current Scout helicopter, which is limited just to eyeballs, that is underpowered, you know, the OH-58A/C.

I might ask General Wagner, who is in the requirements business with the Army, if he would like to further comment on it.

General **Wagner**. Sir, every study we have run on the use of this helicopter, particularly in conjunction with the AH-64, shows that you have a very high payoff in survivability of our own fleet, survivability of your own ground forces, and in the capability to kill the enemy, because it is the only bird out there that can find those targets and survive. That is a key capability that we need of a Scout.

He is going to be out there flying up front, looking for the targets, while he has his attack helicopters waiting in attack position to bring forward, either with direct or indirect fire. Without this bird, we really cannot get the full capability we need out in 1986 and beyond.

We are limiting the buy to a small number, so that we will use them only in those key areas where we think they are going to have a high payoff.

Senator **Goldwater**. Gentlemen, do not hesitate to ask questions whenever you want to.

Senator **Warner**. Thank you, Mr. Chairman.

General **Merryman**. This is the cost chart for AHIP, which shows that over the past year we went down 2 percent. Here again, this is primarily as a result of revised inflation indices.

AHIP FINANCIAL SUMMARY

PROGRAM UNIT COST
(CONSTANT FY85 $)

DEV EST FY82	3.47
FY84	3.66
FY85	3.58

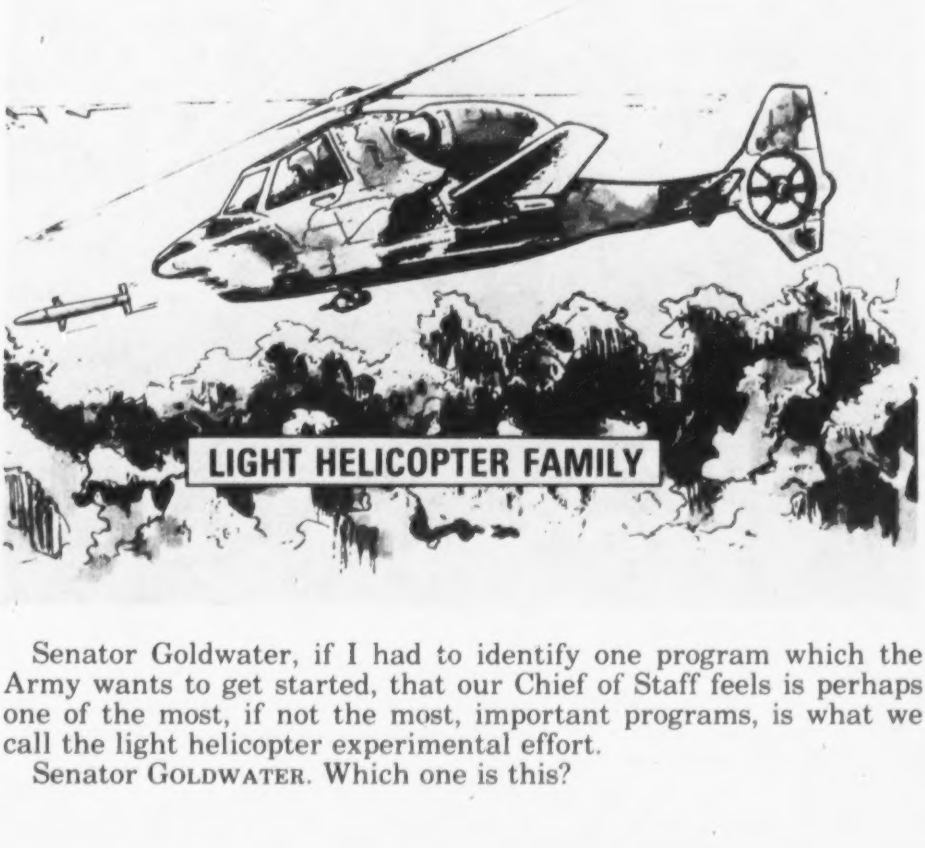
$(000,000)

COST GROWTH

FY84-85	-2.2%
TOTAL	3.2%

	FY83 & PRIOR	FY84	FY85	FY86	TO COMPLETE	TOTAL
RDT&E	145.4	52.7	24.5	0	0	222.6
WPN SYS PROC	28.4	189.5	244.0	269.0	1501.0	2231.9
QUANTITY BUY	LLTI	16	44	56	462	578

$(000,000)



Senator Goldwater, if I had to identify one program which the Army wants to get started, that our Chief of Staff feels is perhaps one of the most, if not the most, important programs, is what we call the light helicopter experimental effort.

Senator GOLDWATER. Which one is this?

General **Merryman**. The LHX, the light helicopter experimental.

LHX—What? Why? How?

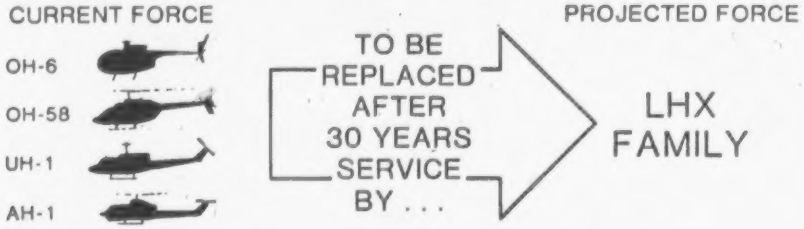
The Army's plan to replace 7,000 + aging light helicopters.

I would like to take a couple of minutes to describe this to you, because it is a new program. It is one we need very badly, so it is important that you understand what we are trying to do, because we are not trying to give you another costly procurement program on top of what we currently have.

What this program is all about is the fact that we have a bunch of old helicopters that we bought during Vietnam, that in the 1990's are going to be 20 to 30 years old. There is going to be 7,000 of those Cobras, Huey's and OH-58's.

WHAT IS LHX?

- A MODERN REPLACEMENT FOR THE CURRENT LIGHT HELICOPTER FORCE



CURRENT FORCE

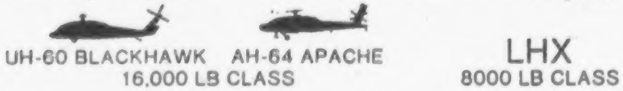
OH-6
OH-58
UH-1
AH-1

TO BE REPLACED AFTER 30 YEARS SERVICE BY . . .

PROJECTED FORCE

LHX FAMILY

- AN AFFORDABLE LIGHT HELICOPTER FOR MISSIONS NOT REQUIRING LARGER { BLACKHAWK / APACHE



UH-60 BLACKHAWK AH-64 APACHE
16,000 LB CLASS

LHX
8000 LB CLASS

Here are the helicopters I just mentioned. They came in the early sixties. There is your Huey, that has been around since the early sixties, your AH-1.

What we want to do is replace all of these by one family. Now, what we are going to try to do, sir, is to take a composite airframe and reduce the weight of the helicopter by about 25 percent. We are going to take an advanced technology engine and try to reduce fuel consumption by about 25 percent. And we are going to try to use the latest technology in developing a cockpit where one guy can do the job if at all possible.

If you notice now, the concept is not to replace the Apache, not to replace the Blackhawk, but instead of buying these more expensive aircraft, wherever possible to buy less expensive aircraft, 6,000 to 8,000 pound class, instead of the 16,000 pound class.

Senator GOLDWATER. Before you go on, could you make a guess as to the average hour per aircraft that these birds can hold on? Is is 5,000 or 10,000 hours?

LHX DISCUSSION

General MERRYMAN. Oh, some of them, sir, are 5,000 or 10,000. I would not know right off. I can remember in Vietnam, for example, some of the Hueys that we currently have, I myself averaged over 100 hours a month in them. For example, in 1967 they delivered a new H model to me. We flew it at 100 hours for the 10 months I commanded that battalion. So you know, that is that 1 year.

Senator WARNER. What was the original design life in these aircraft, and how much are we extending it if we try to push them to 1990?

General MERRYMAN. Sir, we have looked at what it would cost to modify some, and because the technology is so old you would save money by going the way I just described, where you would use new technology and not try to modify the old ones.

Senator WARNER. I am not suggesting that we go back to remodel them. I am just trying, as a point of departure, to determine what was their original design life, and if we are trying to push them to 1990 how much beyond the design life would we be pushing them?

General MERRYMAN. I understand. For the Cobra airframe and the Huey airframe, in the fifties, you know, literally was when we started building them. I was into one of the original Hueys in 1959, this aircraft here [indicating].

In 1960 we ran a study to decide what we needed as a light observation helicopter, and this helicopter, and all 1950's technology is what we are talking about——

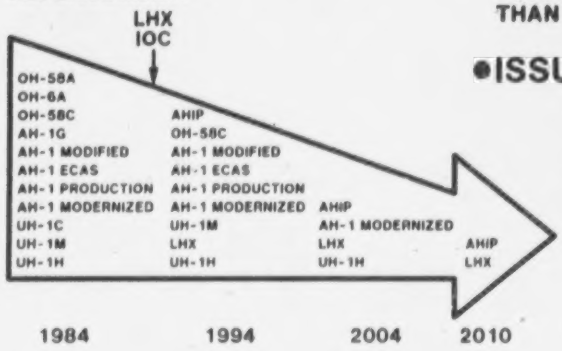
General WAGNER. Sir, we were looking for a design life when we put them in inventory of about 20 years, and we are well beyond that.

Mr. LEWIS. Senator Warner, in terms of hours, most of the components are designed to substantially less than 3,000 hours. Many of the key components, like rotors, are under 1,000 hours. That means that in a 20-year life we have replaced the rotor on these helicopters two, three, or four times. So that indeed they have used up their useful life, and because they vibrate a great deal more than a fixed wing aircraft they have less than expected airframe life than you would with a 707.

General MERRYMAN. You will see that we have all of these types that result in these problems.

LHX ➡ BACKDROP

- **7,000**
  COMBAT MISSION ESSENTIAL ARMY HELICOPTERS REQUIRE REPLACEMENT!


LHX
IOC
OH-58A
OH-6A
OH-58C
AH-1G
AH-1 MODIFIED
AH-1 ECAS
AH-1 PRODUCTION
AH-1 MODERNIZED
UH-1C
UH-1M
UH-1H
AHIP
OH-58C
AH-1 MODIFIED
AH-1 ECAS
AH-1 PRODUCTION
AH-1 MODERNIZED
UH-1M
LHX
UH-1H
AHIP
AH-1 MODERNIZED
LHX
UH-1H
AHIP
LHX
1984
1994
2004
2010

- LARGEST SHARE OF ATTACK & UTILITY FLEET PERFORMING MISSIONS LESS RIGOROUS, "BUT NOT LESS ESSENTIAL," THAN BLACKHAWK & APACHE
- **ISSUES**
  - SERVICE LIFE
  - CATEGORIES
  - COMBAT CAPABILITY
  - O&S COST
  - SURVIVABILITY

Here again, this is another chart that shows you where we want to go. Here is what we have today. This is over time, and you can see that, in other words, we want to aim to where we would have by 2010 LHX and AHIP.

LHX ➡ DEVELOPMENTAL GOALS

- GROSS WEIGHT - 6,000 - 8,000 LBS
- UNIT FLYAWAY COST (FY 84)-
  UTILITY $3-4 M
  ATTACK $5-6 M
- SIGNIFICANT SURVIVABILITY ENHANCEMENT
- 30-40% FLEET ANNUAL O&S COSTS REDUCTION
  - MAINTENANCE MANHOURS PER FLIGHT HOUR - 50%
  - SPARE AND REPAIR PARTS LINE ITEMS - 50%
  - 40% FEWER MAINTENANCE PERSONNEL
- SINGLE PILOT

DEMONSTRATE AN EFFECTIVE & EFFICIENT LIGHT FLEET REPLACEMENT ALTERNATIVE

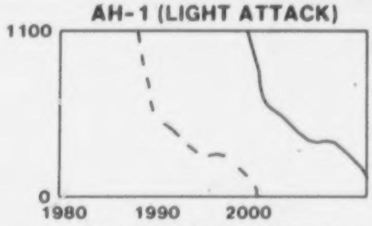
Here is what we are shooting for. The gross weight is 6,000 to 8,000 pounds. The unit fly-away cost with utilities is $3 to $4 million, the TAC is $5 to $6 million, and of course 30 to 40 percent reduction in O&S costs, which of course is your biggest cost over the life of the aircraft.

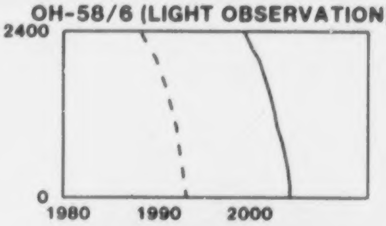
LHX ➡ TECHNOLOGY LEVERAGE

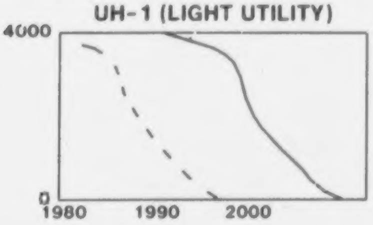
ACAP	ADVANCED COMPOSITE AIRFRAME PROGRAM
ADOCS	ADVANCED DIGITAL/OPTICAL FLIGHT CONTROL SYSTEM
ARTI	ADVANCED ROTORCRAFT TECHNOLOGY INTEGRATION
ATDE	ADVANCED TECHNOLOGY DEMONSTRATOR ENGINES

Here are some of the technologies that we are looking for. What this is is the composite airframe. What this is is fiber optics instruments in the cockpit. This of course is the cockpit configuration and the new engine that uses about 25 percent—a new engine or an existing engine. We do not know what it would be. There are some engines out there that may very well fit.

LHX ➡ SERVICE LIFE







MUST TAKE ACTION NOW

EVEN A VIGOROUS PROGRAM WILL COMPEL RETENTION OF MOST AIRCRAFT TO A 30 YEAR POINT.

*578 OH-58 WILL BE MODIFIED TO AHIP AS A NEAR-TERM COMPANION FOR AH-64.

Senator Warner, this shows you what you are getting at in the three categories. Here is where it would hit in 20 years [indicating].

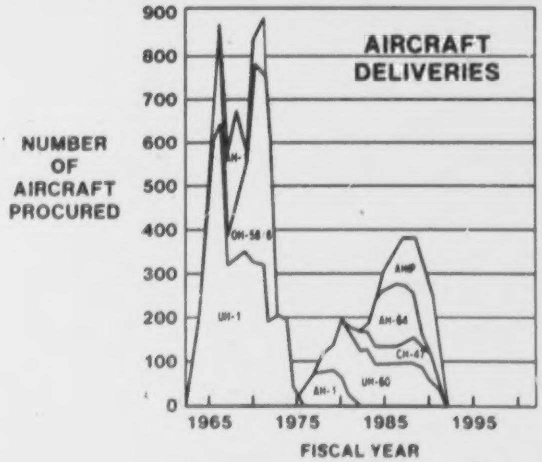
Here are your years over here. You can see that, for example, the Cobras by 1990, you have over half of them that are 20 years old.

In Hueys, down here, as you can see, by 1990 you have, oh, 60 or 70 percent that are 20 years old. This is your 20-year line. I have drawn a 30-year line over here [indicating], which shows you that we will not have a lot of them replaced until they are out for 30 years.

This is a major point here and this is why I am talking to you, because in order to just replace them between 20 and 30 years, that is why we are talking to you today and why we are requesting this program.

LHX → PROCUREMENT PHASING

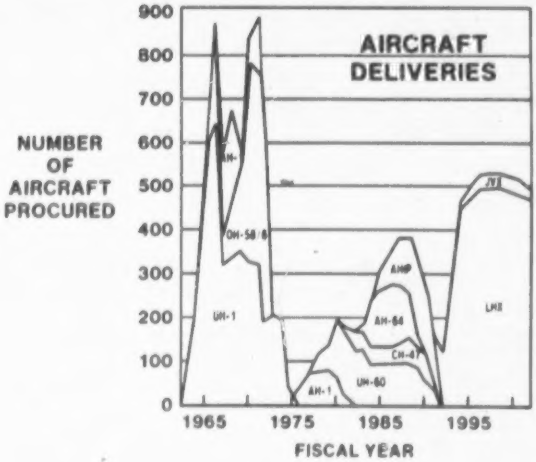
LHX IS ARMY'S
PRIMARY HELICOPTER
PRODUCTION/
PROCUREMENT
PROGRAM IN
THE 1990'S AND
BEYOND



This shows it in another way. Here are the 1965 and here is 1975. Now, here is what we bought back there. Here is what we are buying now. Notice that between 1992 and here there is nothing.

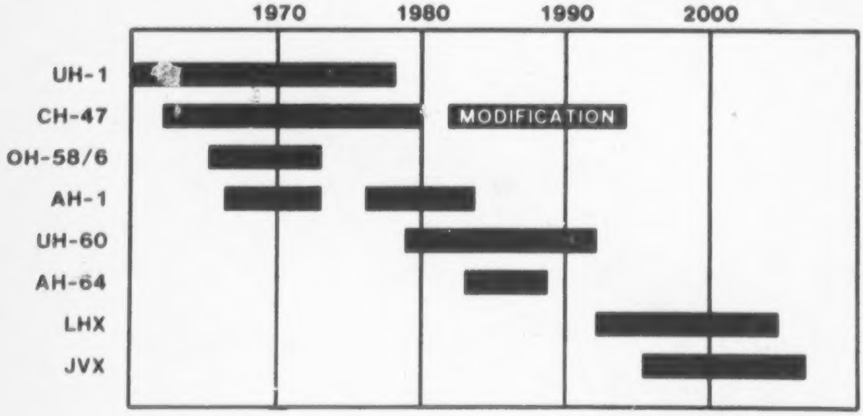
LHX ➡ PROCUREMENT PHASING

LHX IS ARMY'S
PRIMARY HELICOPTER
PRODUCTION/
PROCUREMENT
PROGRAM IN
THE 1990'S AND
BEYOND



Here is what we want to do. We want to buy in 1992 aircraft to replace these aircraft as they approach 20 to 30 years, and then in addition we will buy some JVX, which the Navy is developing.

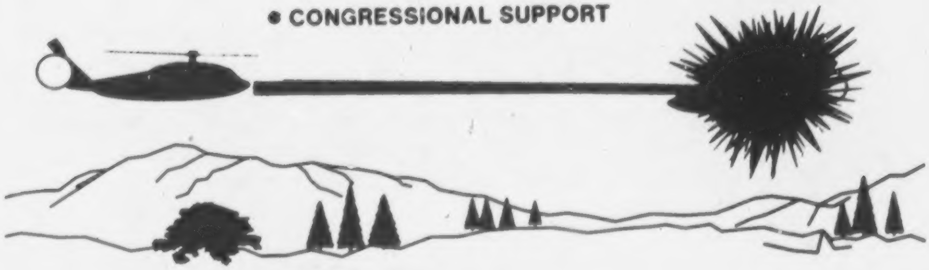
LHX ➡ ARMY AVIATION PROCUREMENT



This is the final chart that shows you here again what our dilemma is. This shows you where we bought each of the types of aircraft, it shows you that what we are asking for is to let us go with a program that will put us in a posture so that we can procure cheaper replacement aircraft from 1992 on, because everything we bought in the earlier years are going to be too old to be fixed.

LHX → KEYS TO SUCCESS

- 7 YEARS FSD TO IOC
- NOT BUSINESS AS USUAL
  - COMPETITIVE FLY OFF
  - COMPETITION THROUGH PRODUCTION
- TOTAL ARMY COMMITMENT
- CONGRESSIONAL SUPPORT



This essentially sums it up: 7 years, FSD to IOC. Here is what we want to do, and we need your support, sir, for the program.

Senator GOLDWATER. Let me ask you a couple of questions. As I told you in the opening, we have not received any figures at all from the Budget Committee. I think we all have to agree that they are going to be lower than last year. We do not have any idea how much, though.

Now, because this is a new buy, if we are required to make major reductions, the chances are it will come in areas like these. What will be the effect on Army aviation if the LHX start were held up for 2 or 3 years?

General MERRYMAN. It would compound the problem, Senator Goldwater, let me explain. We are not asking you, for example, right now to commit the Congress to a procurement program for the helicopter. What we are asking you for are dollars to let us find out if all the things we want to try to do are feasible, and if they are in the final analysis we are going to save everybody a lot of money.

We have to replace our old birds, and if you fix them it will cost you more than it will to buy a new bird. But I have shown you the schedule. For example, we are really late in asking for help on this one now. We should have been over here 2 years ago.

If you notice, we have to go with a 7-year development program in order to start buying these in 1992. You know, after which we do not have any procurement program plan for anything.

Senator GOLDWATER. These are 6,000 to 8,000 pound helicopters. We do not have many companies making a helicopter that size. I cannot quickly think of more than two or three, unless you want to buy a lot of them.

Will the competition be between or amongst competent builders, or will it encourage slipshod production?

LHX COMPETITION

General MERRYMAN. In all honesty, Senator Goldwater, there is more interest out there in the community about this program today, I think, than anything I have seen in say 10 years. For example, right now in the design, in the preliminary design, we have Bell, Boeing, Hughes, and Sikorski. In the development of the ARTI, or the advanced rotorcraft technology integration effort, we have Bell Boeing, Hughes, Sikorski, and IBM.

And I know there are others. It is just a matter of time until—I am trying to think who bought Hughes, McDonnell Douglas. So sir, I see every major helicopter manufacturer in the United States giving it their best shot.

Because you see, putting it another way, what I am talking about is really the only pure helicopter program that is on the books or that will be on the books, if we buy anything, from 1992 on.

Senator GOLDWATER. What do you think we are talking about here, a $5 or $6 million helicopter?

General MERRYMAN. Yes, sir. I think for a utility version you can do it for less than that. For the attack version, we have all of the integrated costs, we are saying $5 to $6 million; and $3 to $4 million for the utility.

Senator GOLDWATER. Thank you.

LHX FINANCIAL SUMMARY

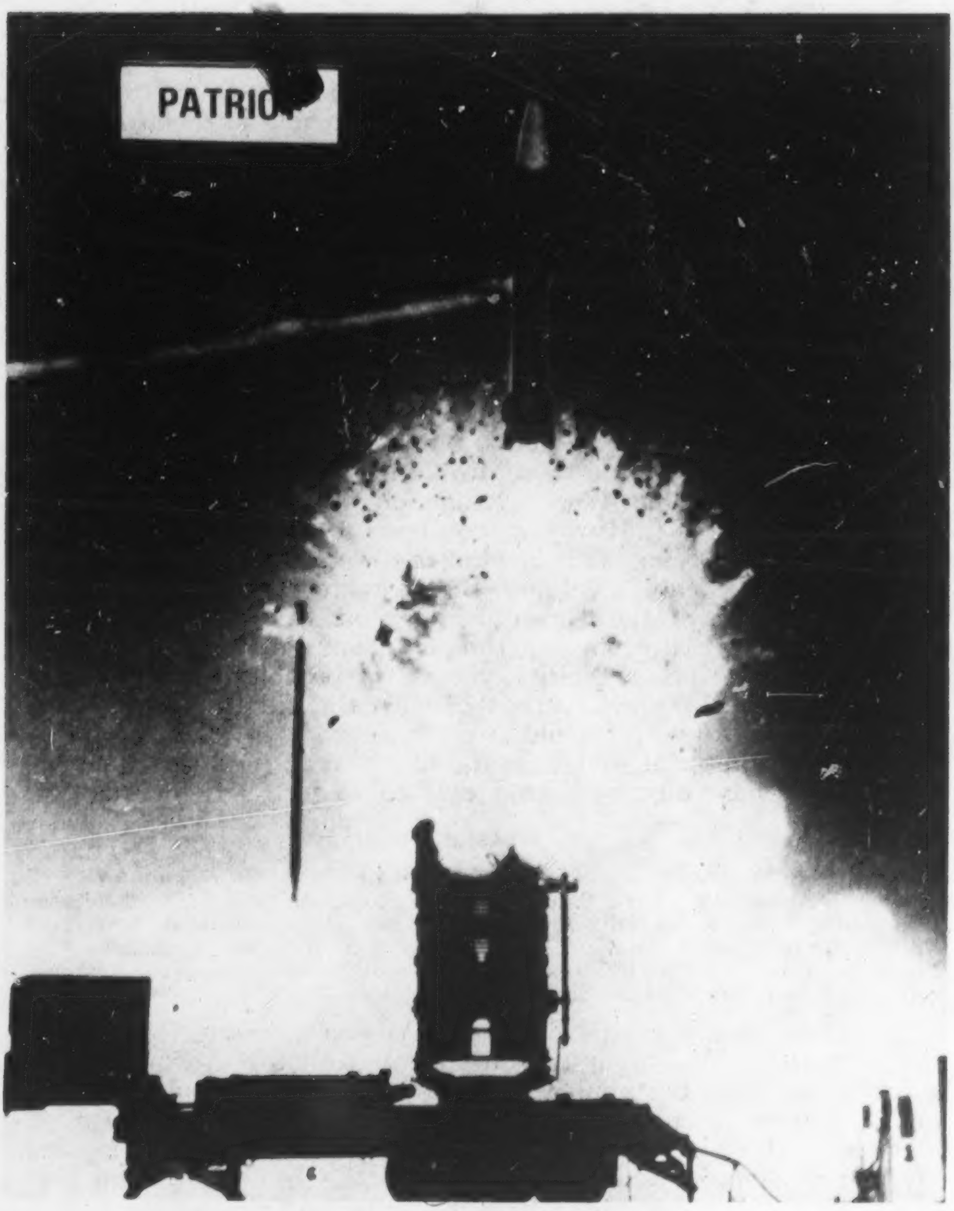
*REPROGRAMING ACTION

	FY $ PRIOR	FY84	FY85	FY86	TO COMPLETE	TOTAL
RDT&E	5.5	26.2*	75.1	154.9	TBD	TBD
WPN SYS PROC	0	0	0	0	TBD	TBD
QUANTITY BUY	0	0	0	0	TBD	TBD

$(000,000)

General MERRYMAN. This shows you the money we are asking for in 1984. Senator Levin, what that is is we will come back to you and ask for 1984 reprograming for $25 million of that. I think we have $1 million.

PATRIOT AND SERGEANT YORK



The next two programs that I am going to talk to the committee about are Patriot and Sergeant York. If there are two programs that we need worse, I do not know what they are. Both of the programs have certain problems and I am going to discuss them for you. I have the project managers who are here in case you want to ask questions that I am not competent to answer.

As I mentioned earlier, the Patriot system is a system that if you said, General, what do we need in Europe worse than anything else today, I probably would tell you Patriot. We have had Hercules over there now since the fifties. That is where you take one battery, for example—you are talking one battery, and there are 16 batteries in there that can shoot at one aircraft at a time and track one at a time.

To put it another way, it is kind of scary, because it says we have had 4,000 people with Hercules in Europe capable of shooting at 16 aircraft at one time or tracking 16. Now, when we put them in Europe in the fifties it was not all that bad.

Since then, of course, the Soviets have been building all kinds of tactical bombers, and we now have, as you have been briefed on, a greater threat.

Now, what the Patriot system will do is, you can take 250 people, for example, in the Patriot battery—I am sorry. 250 are two batteries, and two batteries can go after [deleted] aircraft, because each battery can take on [deleted] aircraft and can track [deleted]. It is an awesome difference in capability.

Or, to put it another way, you know, we will have 54 fire units in Europe, sir. Each one of those fire units can shoot at [deleted]. Now, admittedly what I am giving you are system capabilities. Nothing ever works that way, so you have to accept something less than what I am saying. This is what the systems were designed for and what it is capable of doing. But you know, just the way war will be fought, it will not work out to be that way.

But it is rather awesome, in that with our Patriot capability in Europe, just the U.S. capability, you would be able to theoretically shoot at [deleted] aircraft versus 16 with the old Herc, and track [deleted] versus 16 with the old aircraft Herc.

The final thing that makes it urgent for us to field this weapons system is we have already moved [deleted] to get ready for this.

PATRIOT

Fiscal year 1985—sixth year of production. 1,150 missiles/43 fire units procured through fiscal year 1984. First Patriot battalion operational May 1983. Fiscal year 1983 testing revealed shortfalls. Milestone oriented schedule adopted. Agreement with Germany for 28 fire units. FMS case for 4 fire units being negotiated with Dutch. Fiscal year 1985 RDT&E to counter responsive threat. Fiscal year 1985 procurement buys 15 fire units and 585 missiles.

Sir, here we are in the 6th year. As you can see, this is just useful statistics. We organized our first battalion and when we organized that first battalion we found we had some problems. The problems were essentially RAM, that the equipment did not run as long as we thought it should. We found we had training problems. We had underestimated how complicated the system was and how much training it would take for the young man to operate it, and we did not have sufficient spare parts.

In a nutshell, those were the problems we found on Patriot. Now, what we have done to fix that, Senator Goldwater, is we have developed what we call a milestone-oriented schedule in the Army, which means that we are not fixing to field this dude until it is right. Put in another way, it means that we have delayed the fielding of this unit for Europe for about 8 months.

And we have just conducted a 16-week training program to get the unit at Bliss ready for our next test, which starts imminently. We are optimistic that we have found the fixes. We have a program at the plant to improve reliability, and we believe we have done all that is prudent, sir, as far as moving the system ahead.

Senator GOLDWATER. Now, I have a hunch that you have slipped about a year on this program.

General MERRYMAN. It is about 8 months, sir.

Senator GOLDWATER. Here is another one that we are going to have to take a hard look at. What would be the effect or the impact of slipping the funding for this bird for 1 year, 1 year to figure out what would be the matter, and then to reconsider buying them in the future? And part of that question would be is the manufacturer's liability being met in paying for the mistakes?

General MERRYMAN. The recovery rate, sir, for Patriot is such that the projected recovery—in other words, when we get back on the schedule, would be before the end of what we call the fiscal year 1984 delivery period. So in other words, the 1984 dollars that we are asking for we project we would be able to spend at the time we would want to spend them.

If you were to delay, of course, what you are going to do, sir, is increase the cost of the program. The biggest thing from my personal standpoint is to create an intolerable situation in Europe. I just laid out for you where we are in Europe as far as air defense capability. We have [deleted] left over there, and that is a nuclear capability, by the way. Also, that old Hercules that I was telling you about has only nuclear capability on it. And we are [deleted] that we have had in the past 20-some odd years.

We need to get the system fielded. What we are asking you to do, sir, is to fund the program. We are assuring you we are not going to let the contractor off the hook and we are not going to field it until it is right, and we are doing everything possible to get it right.

Senator GOLDWATER. Any questions?

Senator WARNER. We are in executive session, are we not?

Senator GOLDWATER. That is right.

Senator WARNER. Yesterday the Strategic Subcommittee covered the new Soviet 12 missile. Are you familiar with that?

General MERRYMAN. Vaguely, sir.

Senator WARNER. Well, it is a system coming in where they possibly have an antiballistic capability. There was some reference in my recollection to the possibility that the [deleted].

Could you elaborate on that?

General MERRYMAN. Yes, sir. Not so much the [deleted] but there is another program that we have, Senator Warner, that we call the [deleted].

I do not know of any effort that we have to look at the [deleted]. I think, as I recall, the trajectory of the [deleted] is such that it is not suitable. Also, the range of the [deleted]. So we do not think they will be shooting the [deleted] but we do think they will be shooting two of the other three, at least two and possibly all three.

Senator WARNER. What are you going to do, try to make a [deleted].

General MERRYMAN. Yes, sir. What we are trying to do is to improve [deleted]. Ironically, [deleted].

Now we are in the posture of having to look at putting it back in.

Senator WARNER. So in capsule, we are just looking now at [deleted].

General MERRYMAN. [Deleted.]

Senator WARNER. [Deleted.]

General MERRYMAN. [Deleted.]

Senator WARNER. What do we propose to do in terms of the [deleted].

General MERRYMAN. Here again, sir, when you talk in terms of Army forces and, the range of the [deleted] we do not think that they are going to be shooting at that [deleted]. Now, we are looking at the capability against the [deleted] but what I am telling you is what I think we have found out.

Does anybody have any information that is different from that?

Dr. SCULLEY. We tend in the Army, sir, to look at the [deleted] and in fact we have limited our look here to [deleted] of much more of a tactical and shorter-range nature.

Senator WARNER. Being a strategic program it would be in the Department of the Air Force?

Dr. SCULLEY. I would say Defense, sir, with the strategic defense initiatives as announced.

General WAGNER. We do have dollars here in our tactical [deleted].

Senator WARNER. Thank you.

PATRIOT

Senator BINGAMAN. General, let me ask you a question here about this Patriot. As I understand it—and you somewhat alluded to this—you did some follow-on evaluation [FOE] at White Sands last summer. I gather that was sort of a fiasco because of lack of training and the whole thing did not work. And now they have rescheduled that. My latest information is for April 16 of this year, to go ahead with follow-on evaluation II.

Is that your information?

General MERRYMAN. It is June, sir.

Senator BINGAMAN. So follow-on evaluation [FOE] II will be in June?

General MERRYMAN. Yes, sir.

Senator BINGAMAN. I also was informed here that they have a follow-on evaluation III planned.

General INFANTE. That is follow-on evaluation III that we start in June.

Senator BINGAMAN. Oh, I see. Follow-on evaluation III will start in June.

General MERRYMAN. II was last summer.

General INFANTE. That is correct, sir.

General MERRYMAN. That was the bad one.

Senator BINGAMAN. So III will be done next June. Thank you.

There has been a lot of slippage in this program from what I can tell here, and I guess my question is, would it make sense—the chairman had recommended one possibility of skipping funding. But instead of that, would it make sense to consider fencing fiscal 1985 funds pending receipt of the results of this follow-on evaluation III, so that we can tell whether or not this thing is going to work and whether we can train people to run it before we allow you to spend 1985 funds? I would like your reaction.

Dr. SCULLEY. I think that is certainly within reason, Senator Bingaman. We are as anxious in the Army as our counterparts in industry at Raytheon to make this system work. They have worked with us in overcoming the engineering problems, and we have worked hard in the Army training to use this system.

At this point I am optimistic on FOE III in the June timeframe. We feel that we have acted responsibly in this matter in not fielding the system until it demonstrated its performance.

Senator BINGAMAN. When we get to the appropriate place, Mr. Chairman, in the markups, I may well offer an amendment to see if we can fence the 1985 funding, pending the receipt of the ultimate follow-on evaluation III.

What are we asking them to spend this year?

General MERRYMAN. $1.2 billion.

Senator BINGAMAN. Before we allow that $1.2 billion to be spent, I think we need to have confidence that the system is going to work. And I do not have that based upon the follow-on evaluation that was done last summer.

Senator GOLDWATER. I think I can tell you that this is an area that we are definitely looking at. The Army knows it—and I think you will find the Budget Committee and the Appropriations Committee have both targeted this. It is a questionable area.

Senator KENNEDY. Will the Senator yield?

Senator BINGAMAN. Certainly.

Senator KENNEDY. I think obviously there is the feeling of the members of the committee, which I share, that the system ought to work and ought to function. I think the idea of fencing is a useful and valuable one. I suppose a good deal depends on how it is actually fenced, whether it interrupts production. Whether there is such a limitation that you cannot comply with, both from the manufacturer and the Army's point of view, so that you can get the results which would indicate that it would work and still not slip the system in such a way as to be counter to the recommendations of the military.

Would you help us in terms of trying to devise that kind of a system?

Dr. SCULLEY. Most certainly, Senator Kennedy. We look to work with the subcommittee and the contractor in achieving the objectives of fielding this system.

General WAGNER. Sir, I represent the user side of this. What we have seen to date since they have made some fixes on it and the quality control has gone up, we feel pretty confident that it will pass the FOE III. Because one of our problems with training before our last evaluation was the fact that the equipment was down so often we could not train the people properly. The people are highly trained now because the equipment stayed up during their training time. So we feel confident that it will make the FOE.

That is the reason we have delayed until we are confident that it can do the job. We cannot really stand a break in production, because we need them so badly in Europe for deployment. So if we stop production we will have another startup, and I think personally—the developers would have to comment on that—that we would have more problems if we shut down and tried to start up again.

Senator KENNEDY. I think you have a sense of the committee that we want to make sure we are going to be purchasing a weapon that functions. How you would devise the fencing mechanism in such a way as to continue the capability for training individuals and not terminate the program so that you do not have them trained and you have a self-fulfilling prophecy that the system will not function, is something I imagine we want to avoid.

And yet, I think there is a concern that we are not going to be spending the resources on a system that is just not functioning. And I would certainly welcome the chance to see we are not going to expend those resources unless the system is going to function, but that we are also going to be sensitive to the needs of training and insure that if the system is going to function that we are going to be in a climate where we can move ahead.

And if you can help us with that, I think it would be very useful.

General MERRYMAN. We would be happy to.

Senator LEVIN. What are the deficiencies in the hardware and the software so far in Patriot?

General INFANTE. Sir, there are no substantial software problems. We are going absolutely great with regard to the software mechanism.

The main problems that we have are with regard to the interconnects. We have a lot of cable problems that we had to solve. We had a lot of pin-seating problems that we had to solve. And if you look at about the 1,800 modules that we have with regard to the system, we had about 95 of those that were failing in excess of about four times predicted failure.

What we did is go after those modules that were failing about four times predicted failure. That is what we had fixed. We are now upgrading the systems that are at Fort Bliss and all those that have been built. We have incorporated those fixes into the production line.

That is why we are sure that what we are now building is in fact a quality system that will meet the reliability specifications.

Senator LEVIN. Are the problems that were discovered a design problem or was it a manufacturing problem?

General INFANTE. Sir, most of them were in fact of a manufacturing nature. Now, there were some subcomponent design problems. When I say "subcomponent" I am talking about part of 1 of the 95 modules that we had to fix.

Senator LEVIN. When the problems were manufacturing rather than design, were they being fixed at no cost to the Government?

General INFANTE. Sir, with the type of contract that we have, it is a cost-sharing plan between us and the contractor. I should add, however, that the contractor has made substantial capital investment at his own expense to correct these problems, also.

Senator LEVIN. Could you provide for the committee exactly what deal we struck with the manufacturer to correct manufacturing problems? I am not talking about design problems. I think we ought to be responsible for them, frankly, if we impose or enforce the design on folks. I do not see why we should try to hold them responsible if it is our design.

But where it is a defect in the manufacturing, material or the labor, then it seems to me that they ought to fix it. Would you let us know exactly what warranties were in place in the contract that produced the missiles and what arrangements we worked out for repair and correction? This is just an illustration of a problem. This is not particularly unique to Patriot, by the way. This is a problem that we are facing in other subcommittees, in fact in the full committee, on the warranty issue.

But this is an example of it.

General **Merryman**. Yes, sir.

[The information follows:]

PATRIOT MANUFACTURING

The production contracts have contractual responsibility with respect to deficiencies in material or workmanship under the DAR clause, 7-203.5(a) "Inspection of Supplies and Correction of Defects". Based on field performance, shortcomings experienced in the interconnect module, exciter and rack areas were found to be material/workmanship related. The contractor replaced this hardware with items that had new manufacturing processes and/or testing procedures. The ground support equipment (radar, ECS, launcher, etc.) currently fielded is undergoing an "upgrade" program that replaces the hardware exhibiting deficiencies. As a result, the contractor has implemented the appropriate changes and improved manufacturing procedures and processes to increase the quality and reliability of the production hardware.

Additional manufacturing improvements include increased quality control through more hardware screening, inspection, and testing at the component level. Further improvements include implementation of a Test Analyze and Fix (TAAF) program that involves increased subassembly testing, and a Production Reliability Verification Test (PRVT). A Production Reliability Acceptance Test (PRAT) is being implemented and include increased system level testing. Further actions in process include establishing a spare and repair parts reliability screening requirement. Past production contracts did not contain warranty provisions. However, there were provisions and clauses which required contractor participation in repair and correction.

PATRIOT

Senator **Levin**. Was there not a software problem identified in the maintenance diagnostics area?

General **Infante**. Sir, that was a problem that has since been fixed.

Senator **Levin**. Pardon me?

General **Infante**. That was a problem, but it has since been fixed. We are now averaging about [deleted] fault isolation, which is what you have reference to, I think, quite frankly, and we are on the way to [deleted].

Senator **Levin**. So the software problem did exist, but has now been corrected?

General **Infante**. Yes.

Senator **Levin**. My last question in this area concerns the question of the type of contract which we use. Again, this is just an illustration of a problem and is not unique to Patriot. We are looking at the 1984 contract right now. We have not yet signed a contract.

Will that be a fixed price contract?

General **Infante**. Yes, sir, it will be a fixed price contract.

Senator **Levin**. For 1984?

General **Infante**. Yes, sir. We also have a fixed price incentive for 1983. We are going to go either to a fixed price incentive for

1984 or a firm fixed price. We are not sure yet where we are going to come out.

Senator **Levin**. Why should we not have a firm fixed price for 1984?

General **Infante**. Sir, the biggest reason could be because of the guarantees that the contractor might want for a firm fixed price. We might not be able to afford it.

Also, we are going to add to the contract. We have not discussed the fact that we are going back and opening up the 1982 contract and the 1983 contract and we are adding reliability testing to both of these contracts, to 1982 and 1983.

In the 1984 contract we are also going to have reliability testing. So at the end of the production process now, before the Government signs for a Patriot system, it will be reliability test run. When you add in the contractor's risk, because if the system does not pass the reliability test he in fact has to fix it at his own cost—so we are going through the overall negotiation process now to try to bound his risk in some way, and if we throw in the risks associated with reliability testing and that associated with a firm fixed price contract, then we may for the ground systems have to go with a fixed price incentive contract.

With regard to missile systems, though, it should be a firm fixed price.

Senator **Levin**. Would you submit for the record the difference in the costs between those two types of contracts for 1984 as proposed by the contractor?

General **Infante**. Yes, sir.

[The information follows:]

PATRIOT CONTRACTS

Firm Fixed Price (FFP) is the only type of proposal submitted by the contractor for fiscal year 1984. This proposal did not include reliability acceptance procedures nor considerations for warranty. A revised request for proposal is being prepared by the Government.

Senator **Levin**. Would you also indicate what was the amount in the 1984 budget, the number of these that we thought we would buy in 1985. We projected how many?

General **Infante**. Sir, the amount that we had in the 1984 budget that we are buying in 1985 was 17. We are asking for 15 this year. It was a reduction of two.

Senator **Levin**. So we reduced it from what we projected in 1984.

Thank you, Mr. Chairman.

Senator **Kennedy**. Might I ask if you have responded—and I apologize for coming to this hearing late—what steps the contractor will take to try to conform with the requirements of the Army? They have a program, as I understand it. Has that been included as part of the record?

Mr. **Sculley**. It has not, sir, but we will be happy to provide it.

[The information follows:]

CONTRACT COMPLIANCE—PATRIOT

The low system availabilities experienced during the Patriot FOE II test conducted in 1983 were primarily due to a number of interconnection and other problems which were caused by incomplete processes and procedures that had not matured when the Patriot FOE II test units were manufactured. These problems were the primary contributors to the maintenance downtime accrued during the test. Corrective actions, to include increased fabrication controls, intermediate inspections during factory integration and temperature cycling at major item level, are underway to reduce the number of such faults on subsequent units. These activities are being conducted by the contractor in conjunction with upgrade programs implemented to correct problems in the initial production units utilized in FOE II. Completion of the upgrades in preparation for FOE III a Fire Unit (FU) Mean-Time-Between-Failure (MTBF) improvement of at least 100 to 200 percent over that previously demonstrated is expected.

Various contractual actions have also been initiated by the Patriot Project Manager to assure increased reliability of production hardware. Specifically, the existing fiscal year 1982 and fiscal year 1983 Patriot production contracts are being opened to include requirements for reliability testing. The fiscal year 1984 production contract is presently being negotiated. When finalized it will also include reliability acceptance testing requirements.

The long term efforts recognize that equipment reliability is the key to better availability. Efforts now underway as part of the Maintenance Improvement Program (e.g., systematic fault insertion and improved diagnostics) will continue as will the acceleration of spares to support fielded systems. But the main thrust will be toward better equipment reliability. An aggressive reliability growth program has been initiated which is attacking all reliability detractors with the goal of achieving a mean time between failure (MTBF) well above the theoretical prediction for each of the Patriot equipments. The primary thrust is a concerted effort in the production plants to improve the quality of the product and to "build it right the first time." This effort is supplemented with an aggressive find and fix program to correct problems in the early production equipment.

Senator LEVIN. The missile that we are taking out of Europe, the Hercules, if there is a delay on this of 6 months, why do we not just leave them there a little bit longer?

General MERRYMAN. [Deleted] of them are already gone, sir.

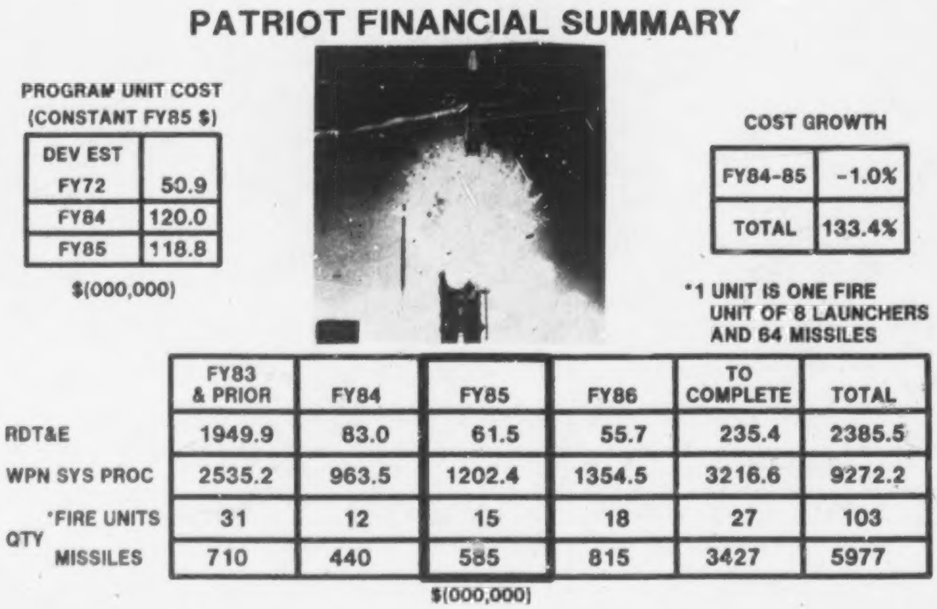
Senator LEVIN. Well, what about [deleted] we are going to move?

General WAGNER. The standdown is already in progress on the Hercules, sir. Their capability is so small that when we looked at that, it was not worth it to extend them in service.

We are going to delay some of the Hawk deactivations that are going on. We will leave them in until these are on track.

Senator LEVIN. Thank you.

Senator GOLDWATER. Gentlemen, please continue.



PATRIOT FINANCIAL SUMMARY

PROGRAM UNIT COST
(CONSTANT FY85 $)

DEV EST	
FY72	50.9
FY84	120.0
FY85	118.8

$(000,000)

COST GROWTH

FY84-85	-1.0%
TOTAL	133.4%

*1 UNIT IS ONE FIRE UNIT OF 8 LAUNCHERS AND 64 MISSILES

		FY83 & PRIOR	FY84	FY85	FY86	TO COMPLETE	TOTAL
RDT&E		1949.9	83.0	61.5	55.7	235.4	2385.5
WPN SYS PROC		2535.2	963.5	1202.4	1354.5	3216.6	9272.2
QTY	*FIRE UNITS	31	12	15	18	27	103
	MISSILES	710	440	585	815	3427	5977

$(000,000)

General MERRYMAN. This is the cost summary for our Patriot, and you will notice that the cost went down this past year 1 percent, and that is due to inflation indices.

SGT YORK

This next system that I will discuss with you, sir, is the Sergeant York, formerly called the DIVAD. As I mentioned earlier, there are twin 40 millimeters, two radars on top, one acquisition, one tracking, M-48 chassis.

SERGEANT YORK

Fiscal year 1985—fourth year of production.
276 systems procured through fiscal year 1984.
Early testing revealed some deficiencies.
Fiscal year 1983 testing demonstrated system improvements.
Fire unit deliveries late.
Design verification test—March 1984.
Initial production test—late fiscal year 1984.
Fiscal year 1985 procurement buys 132 fire units.

We are in our fourth year of production. That gives you the number of systems we have procured. We found some deficiencies in early testing. However, subsequent testing showed that we have found a fix for most of those.

Our current problem is with fire unit deliveries. The problem in this case is that Ford Aerospace is having problems putting the things together so that they will work properly. They are short in spare parts and they are short as far as training equipment deliverables.

This program, like the other program, as I mentioned, Senator Goldwater, is one the Army badly needs. We have put the program on the same milestone-oriented schedule that the Patriot is on, which is another way of saying that the Army is not going to field the thing until it is right.

We are starting design verification testing in March to see that, if the fixes that we have developed are successful, IPT (Initial Production Tests) will be late in the year and the procurement for this year buys 132 fire units.

This system, as you probably remember, sir, is one we did under the Skunk Works. We cut 6-years off the production schedule. We are proud of what we have done. We regret the fact that we are having problems in startup out there. I have to tell you, sir, quite honestly, from where I sit after 4 years in this job that I have learned one thing that I would leave with the committee. I do not mean to say this as an excuse for why we have problems with programs in the Army. I think what I am going to tell you is also applicable to the Air Force and the Navy, and that is, one thing I have found, sir, in all of my years in the Army is, when you start making something you never do it right first. I have never ever seen anything done right.

I have learned now, as I leave the Army, and in the past few years I have learned that our truck manufacturers cannot make trucks right the first time. I have learned, I do not care how simple it is, that you cannot make it right the first time.

I keep looking for an exception to that, because I would be very happy to find an exception to that rule.

What I am saying is, we have startup problems with this program. We have startup problems with our program, sir. I think we have done or we are initiating all the actions that are reasonable to take to get it back on track.

I have the project manager here if there are any specific questions that I cannot handle that the committee would like to ask me about this program.

Senator **Levin**. I have a question, Mr. Chairman, if I could just pop in. Apparently there is some difference of opinion as to just how easy it will be to fix these problems. Is there such a difference of opinion, and could you maybe have the two differences illuminated for us here?

General **Adsit**. I am General Adsit, the project manager. The problems that we have today have been those that arise in such a system as this when you first put it through testing. We have deliberately proceeded on the deliberate and cautious course to make sure that we did the proper testing so that we would have a quality system that did perform well.

We have gone through about 95 percent of the acceptance testing to date on the first fire unit. We have one remaining bug to get out of the production software before we finish with the first fire unit.

I am not sure what you refer to, that some others thought it might be difficult to get the bugs out of the system potentially. That is ongoing. Nobody I know to date has said anything about the acceptance testing being more difficult than what we had thought.

Senator **Levin**. There is no difference in the Army about the level of risk in solving the software problems?

General **Adsit**. I do not believe so, no, sir.

Senator **Kennedy**. Would the Senator yield?

Senator **Levin**. I yield.

Senator **Kennedy**. As I understand it, in Defense Week there was a quote that it performed so poorly in the test that its maker has balked at submitting three subsequent models to the Army for final acceptance tests. The article reported that unit one was locking on false targets, particularly the rotating blades of a bathroom exhaust fan found on the roof of a building 100 meters away.

I do not know whether you have seen that before or whether you want to make any comment.

General **Adsit**. Yes, sir, I have. As I said, we decided that we were not going to rush through the testing of this weapons system, so we purposely decided that we would go slow and make sure that we tested it properly. And based upon that, the contractor, following our guidance, has proceeded very slowly to make sure we have worked out all the bugs on the first unit before we submit any of the other fire units for testing.

There have been some problems with instrumentation and things like that in the testing of these. We have worked out those test-like things on bad instrumentation. We have gotten through those and we have that working well now.

Senator **Kennedy**. Well, the report on that was quite—in terms of its performance, was really quite critical. And your response is that those particular items which were mentioned in that Defense Week critique of the early tests have been resolved?

General **Adsit**. Yes, sir. We went through some testing kinds of problems. We went back through and retested those. The performance to date was good, except for the one remaining problem that we have to solve, and we expect to solve that momentarily.

Senator **Kennedy**. Have you gone back from the test models to the production models to find out whether those will perform as well?

General **Adsit**. Sir, the ones we are talking about now, that were quoted in that article, are the first production systems, and the performance that we have seen in acceptance testing indicates that the performance on production units will be at least as good as the prototype testing we did.

Senator **Kennedy**. Is the Inspector General investigating any portions of the DIVAD program?

SERGEANT YORK AUDIT

Geneal **Adsit**. Sir, the DOD IG is conducting an audit. It is looking into three aspects of the program. One is the buying of spares, another is how we conducted the source selection on the competition between Ford and General Dynamics, and the third is contracting and negotiation procedures.

Senator **Kennedy**. When is the report expected?

General **Adsit**. We do not have an exact date on when that report will be finished. Our indication is it will be some time this summer. That is the best date that I have so far, sir.

Senator **Kennedy**. That will be after the authorizing and probably after the appropriations process.

General **Adsit**. As far as I know, sir.

Senator **Kennedy**. Is there any material that could be made available to the committee prior to that time before we make a judgment about it that would be useful to us in making our determination, anything in that IG's report?

General **Adsit**. I do not know, sir. I have not seen it yet.

Senator **Kennedy**. It might be worthwhile for the staff to get a review on what has been developed to date to be able to advise us, I would expect, as to what they have been able to find out. I will pursue that.

Have you been involved with the IG at all with regards to reviewing the program?

General **Adsit**. Yes, sir.

Senator **Kennedy**. Can you tell us about the nature of that relationship?

General **Adsit**. The auditors have come to our office and to our readiness command and have asked questions about how we went through the competition, for instance, were we thorough enough, was it fair—those types of questions we have asked ourselves of the procurement people in trying to determine the lessons learned from this type of competition.

Auditors have visited the readiness command and have made inquiries of personnel there on how we buy spares for this program.

Senator **Kennedy**. Did you give them a report or any memorandum? Is there anything written, or has the IG given you anything to ask for your comments?

General **Adsit**. Yes, sir. They have discussion papers which they have submitted to us. We just received that several days ago and are looking at that now.

Senator **KENNEDY**. I would just wonder whether we could be kept abreast of that, Mr. Chairman.

Senator **GOLDWATER**. I think you will find, Senator, that the staff is up on this quite well. I personally have fired the weapon. I spent a day at a company test just before the Army took over for testing. And while there were some normal, what I would call small deficiencies, the weapon fired very well, very easily.

It is really a very simple weapon, and it is very, very accurate. I think the staff has kept a rather complete followup on this. There has been criticism on it, but I think it is a very good weapon.

Senator **BINGAMAN**. Mr. Chairman, may I ask a couple of questions?

Senator **GOLDWATER**. Senator Bingaman?

And you know, it has been tested in your State.

Senator **BINGAMAN**. Oh, they test all of these in my State.

SERGEANT YORK REPORT

Senator **BINGAMAN**. Let me just ask this. Last year in the report, this committee put in some language saying that we would like to get a report to the appropriate committees from the Secretary of the Army on this program 30 days prior to executing the third contract option for the procurement of 130 vehicles.

Can you tell me what kind of time schedule you are now looking at for the execution of that third year, that contract option for the 130 vehicles?

General **MERRYMAN**. It could be as early as May, sir, in which case you would get the letter in April. Or we could delay it on a day-for-day slip basis from the first day they were supposed to deliver the fire unit. So in other words, what that amounts to now is it could be between May and September. And we would like to sign the contract, of course, as soon as we can.

Whenever we make a decision on when we will sign the contract, we owe you that letter 30 days prior to that, sir. What I am saying is it could be as early as April or as late as August.

Senator **BINGAMAN**. I have a copy of a letter that Susan Meyer, the contracting officer, wrote to the president of Ford Aerospace, which I thought was a fairly strong letter—which I commend the Army for—indicating the serious concern that she had with the status of both hardware and late deliveries with the Sergeant York program, referring to what has happened so far, as totally unacceptable contract performance, also indicating that the Army would exercise this option that it had to postpone day for day because of the tremendous delay that had been incurred.

Now, are you saying that the Army would not exercise that?

General **MERRYMAN**. I am saying it depends largely on what Ford comes up with and our satisfaction with that. What we would like to do, Senator, is to get a handle on how much we think they are going to charge us for a follow-on contract.

Senator BINGAMAN. How much they are going to charge you for following the contract?

General MERRYMAN. For a follow-on contract. You see, these first 3 years were negotiated under competition. This next contract will be the first contract that we will not have competition on. We would like to have a handle on how much they are going to ask us to pay them.

What we are looking for is as early as we can get the information between May—you know. If we can get it in May, that would be fine. Then we would be ready to sign the contract if the answer is suitable.

What that letter says—and that is what I described earlier—you know, originally we were planning to sign the contract in May, and what the letter says is we have the right to delay that. You know, I think it is into September, if I recall, I think 122 days or something like that. But it does not necessarily say we will do that, or if it does it should not say it, because if we get the information we need earlier we will sign the contract then.

I would like to ask the PM now, sir, to correct me if I said anything that is not right.

General ADSIT. No, sir, that is correct. If we receive the information that we are seeking, then, we will be able to sign the contract as previously scheduled.

Senator BINGAMAN. I would like to explore something with you. You indicate on the chart that for this fourth year of production that we have procured, 276 systems. Now you are asking us to procure a bunch more without any adequate test results, as I understand it, or at least the test results are not what we would want them to be. Is that a misstatement?

General MERRYMAN. Sir, the testing—I think most of the results in the later tests have been satisfactory. The problem now is just being able to put them together right. You know, RAM spare parts, a shortage of parts, a shortage of parts that Ford themselves build to make the system reliability, and some software problems.

General ADSIT. The testing that we have done to date on prototypes, the system performed well in that testing. What we are having now, the problems we have had recently, are when we convert it from a prototype and we put the item into production. The first article coming out has had some problems in the initial start-up of trying to get that first production one off the production line.

There really is where we have had some problems. We have gotten through most of those problems. We have one remaining problem to fix, and when we do that we will be able to accept the first production article.

Dr. SCULLEY. I would like to add if I may, sir, that in this case Ford, I think, has been cautious in the acceptance testing. We want acceptance testing to be an accurate predictor of performance in the field. We are contractually signed up with Ford that that system will perform. I think this one in contracting is to our credit.

If it does not perform as contractually assured, then the fix or fixes are on Ford. And we have been cautious and they have been cautious during this period.

Senator BINGAMAN. I commend you for being cautious but I am just wondering—It appears to me that the bulk of the moneys that was authorized and appropriated last year, will really not be spent, the bulk of it, until 1985 at any rate, the way you folks are going on this because of the slippage in this thing.

I am just wondering why it makes sense for us to go ahead and authorize more money for expenditure in 1985. Why we could not do in this program what the chairman suggested in the Patriot, that we would skip a year and let you spend the 1984 money in 1985, and then when you need more money we would authorize that.

General MERRYMAN. The answer to the question, sir, is if we get well, like in the Patriot program, at the rate that we now project, we will need the 1985 dollars that we are requesting to avoid a break in production, because we will get well before you expend, you see, the last of the 1984 dollars.

Senator BINGAMAN. But you would not need all that you asked for.

General MERRYMAN. You would, unless you reduced the amount of production.

General ADSIT. Sir, we will complete the 1984 production on time and in the same timeframe that we had originally asked for, that we asked for in the 1984 budget. Ford and ourselves have a recovery plan in which we will produce the last fire unit with the 1984 money at the same time as we had originally forecast.

Dr. SCULLEY. I personally have been involved in that assessment, Senator Bingaman. I have visited Ford with a small team last month to be assured of the facts. I asked Ford for that recovery plan. I have asked the army to perform a careful assessment to assure the feasibility of such a plan and the realism associated with it, and I stand by that plan.

Senator BINGAMAN. OK. I think I will just look into that a little bit more before we have our markup, Mr. Chairman. It seems to me that we are committing to buy an awful lot of these units before we have any off the production line that we are happy with.

It just concerns me that we are so far down the road without having a product that we are confident is going to work.

Senator LEVIN. If I could jump in on that question, I think you said that we have an option not to buy 15 or so in 1984, and we would like to know about the 1985 and the follow-on contract price before we decide whether or not to exercise the option relative to 1984. Is that true? Did I understand that correctly?

General ADSIT. Sir, the option we are talking about is for the 1984 buy and it is for the whole amount. What we were saying was that we want to take a look as we go from a competitive contract to one which is not, we want to take a look at the 1985, at what it would cost us for those we are buying in the 1985, 1986, and 1987 period.

Senator LEVIN. Is it to their advantage to give you that figure before you exercise your option on 1984? Because it is to our advantage that we have the figures. Obviously, you would like to wait until you have them. I understand that. But is not the opposite true, that it is to their advantage not to give us that information until after we have exercised that option?

Dr. **Sculley**. Sir, I do not see that there is anything to be gained from their point of view, except it has been a good working relationship, a contract obtained under competition, a fixed price incentive option from the development, one that I think has been ambitious but not reckless in schedule.

I expect Ford to continue in a proper relationship with the Army and cooperate.

Senator **Levin**. So you do not see any economic advantage for them in forcing us, in effect, to exercise the 1984 option before we negotiate a final price on the follow-on contract?

Dr. **Sculley**. I think it would be a good negotiating position not to have to have made that commitment. I do not see the advantage to them by revealing that, sir.

Senator **Levin**. That is what I am saying.

Dr. **Sculley**. I agree with you.

Senator **Levin**. There is an economic disadvantage to revealing it, is there not?

Dr. **Sculley**. If there is nothing to be gained—I would not put it in the disadvantage category, however.

Senator **Levin**. So you do not see any advantage or disadvantage to them not to negotiate the 1985 price or to negotiate it, either way, before we resolve whether to exercise the 1984 option?

Dr. **Scully**. Of the three possible outcomes—advantage to them, disadvantage, or nothing gained—I see the nothing gained and advantage by not revealing that as possible options.

General **Adsit**. Sir, one way in which there possibly might be an advantage, but it seems to me that would be short-sighted of them, is if we do not have a system that is affordable both within the Army and Congress, they know that they will not have a program. So for whatever advantage that they can get on the price of the 1985 buy that we will pay for not having a program—and I think they see that, sir.

Senator **Levin**. We are trying to correct a software deficiency and they are trying to correct it, as I understand it. My information is that Ford says there are two software deficiencies and not one. Is that different from your information?

General **Adsit**. Yes, sir. We tested it over last week and were able to solve one of those problems. So there is still one to be solved.

Senator **Levin**. I will pursue Senator Bingaman's question for a moment. When will we know whether that has been solved, before or after we vote on the 1985 dollars?

General **Adsit**. Sir, you will know that before.

Senator **Levin**. Before we mark this up?

General **Adsit**. Yes, sir.

Senator **Levin**. Thank you, Mr. Chairman.

Senator **Goldwater**. Thank you.

Gentlemen, please continue.

General **Merryman**. This shows you the funding that is there for Sergeant York, and it shows you that the cost growth is one percent this past year, and that was the result, sir, of additional ammunition funding. It shows you that we are asking for $621 million for 132 pieces.

SGT YORK FINANCIAL SUMMARY

PROGRAM UNIT COST (CONSTANT FY85 $)

DEV EST FY78	6.51
FY84	6.47
FY85	6.54

$(000,000)

COST GROWTH

FY84-85	1.0%
TOTAL	0.4%

	FY83 & PRIOR	FY84	FY85	FY86	TO COMPLETE	TOTAL
RDT&E	267.1	0	0	0	0	267.1
WPN SYS PROC	1117.0	646.6	621.5	551.8	246.0	3182.9
QUANTITY BUY	146	130	132	144	66	618

$(000,000)

Senator Goldwater, that is the end of the major systems that I have laid out for you. I can cover several others at your desire.

Senator GOLDWATER. I think the major systems are the important ones. I had only one minor system question. How do you shoot down a 9 millimeter pistol?

9MM HANDGUN

General MERRYMAN. I am supposed to say glad you asked, but I am not going to say that.

Senator GOLDWATER. We still have 2½ million .45 automatics. I have yet to run into anyone who has ever killed anyone with a pistol in a war. If I had to defend myself with a pistol, I would much rather have a .45 than a 9 millimeter. You can shoot the 9 millimeter faster, they make a small, neat, hole in you, but they do not stop you.

And I wish the service would quit playing around with this pistol.

General MERRYMAN. Well, you know what our dilemma is, do you not? The Congress has appropriated dollars for us, for example in 1984, to buy for the Air Force and the Navy, and therefore we have been directed by OSD tc do the testing, so that we will be in a posture to buy those.

Senator GOLDWATER. Well, we are not sure we are going to buy them for anybody.

Mr. SCULLEY. That is correct, sir. And we owe this committee a report on the test and evaluation findings, and we will so comply.

Senator GOLDWATER. I have been down to the test and evaluation, and I have been a qualifed expert on small arms for as long as

I can remember. I would rather have a bow and arrow than that 9 millimeter.

Does the staff have any questions on anything that we have not covered?

[No response.]

We will submit for the record those questions that we have not covered of a major nature.

I want to thank you, gentlemen. I think you have done a very good job. I will repeat what I said at the outset, that this year we are governed more than ever by the dictates of the Budget Committee, and we may have to make some rather sizable cuts. But we want to be sure, if we have to do that, that we do not make them in the wrong places.

If there is anything you think of that we have not asked that might add importance to your presentation, please do not hesitate to say so. But we do thank every one of you for being here.

And unless the Senator from Virginia has any questions——

Senator **WARNER**. No, but I just want to mention the pleasure that I have had working with General Merryman over these years.

General **MERRYMAN**. Thank you.

Senator **GOLDWATER**. He is about to go home and quit.

Senator **WARNER**. Well, I do not think he is quitting, but he has a well-earned sabbatical coming.

General **MERRYMAN**. I might say, sir, that I am going to become a Virginian. I am from Arkansas, but I will be moving to Springfield and I will be one of your constituents.

Senator **WARNER**. And we welcome you.

Senator **GOLDWATER**. Before we close I would like to include for the record a statement by Maj. Gen. Francis S. Greenlief (retired), Executive Vice President of the National Guard Association of the United States.

[The prepared statement of Maj. Gen. Francis S. Greenlief follows:]

PREPARED STATEMENT BY FRANCIS S. GREENLIEF (RETIRED), EXECUTIVE VICE PRESIDENT OF THE NATIONAL GUARD ASSOCIATION OF THE UNITED STATES

Mr. Chairman, and members of the subcommittee, I am pleased by the opportunity to discuss the subject of equipping the Army and Air National Guard so as to bring their readiness up to the levels required by their wartime missions. I will briefly discuss the problem of producing an acceptable level of readiness in the current environment, and will then identify specific procurement actions which we recommend to solve some of our most pressing equipment shortages.

Based upon statistics which we believe to be facts, the threat to our national security continues to be high and increasing. The Warsaw Pact Forces currently outnumber NATO Forces whether measured in terms of military personnel, combat units, modern weaponry, or a combination of all three. Their weapons production rates exceed ours. One of the most cost effective ways to offset their advantage is to improve the combat readiness of Guard and Reserve forces by fully equipping them with modern deployable equipment.

While our national security is threatened by the strength and threatening posture of our potential adversaries, our national economy is threatened by an out-of-control fiscal deficit. As a result, the Congress, being concerned about both serious threats, has been looking more and more to the National Guard and Reserves as a way of meeting both threats. Several sessions of the Congress have emphasized the placement of increased reliance on the Guard and Reserves.

During the last session of the Congress our Association was specifically asked to provide its views on the capability of the National Guard to accept increased national defense responsibilities. As a starting point of this statement, the following summary of last year's testimony is provided:

The NGAUS does not recommend any reduction of the active Army and Air Force, We believe both forces are smaller than needed in the face of the Russian threat.

The NGAUS does not recommend an expanded force structure for the National Guard until a solid commitment is made to fully equip the current structure.

We believe that the Army National Guard already has been tasked to produce more combat readiness at earlier times than is possible because of resource shortages. But that I mean manpower, training time, and equipment. Any proposal to increase reliance on the Army Guard must consider these shortages.

The Air National Guard, while currently able to perform its mission with assigned resources, is limited by some antiquated aircraft and obsolete communications gear. Thus, we believe the Air National Guard cannot increase its force structure or roles and missions without being provided more modern deployable equipment. The Air National Guard does have significant capability to increase the combat capability and effectiveness of its current force structure by robusting (increasing the Primary Aircraft Authorization) its existing units.

Having said the above, the Army and Air National Guard can improve the readiness of the existing National Guard force structure, and increase its force structure, if the necessary resources are provided.

Whether or not active force structure can be safely reduced by placing new units, roles, or missions in the National Guard and Reserves depends on more factors than just the ability of the Guard and Reserve leaders to produce the necessary readiness. Most certainly, no new units should be placed in the Guard or Reserves unless equipment is programmed for procurement for those units.

Last year the Army reported to the Congress that if the Army was permitted to procure equipment as requested in the FY84 budget, about $900,000 worth of equipment would be issued to the ARNG over a five year period as the direct result of the FY84 procurement request. That statement represented real progress because one year earlier the Army did not know what the ARNG equipment shortages were. This year the Chief of Staff of the Army has said in testimony that the FY85 procurement request, if authorized and funded, will permit the Army to issue $1.4 billion worth of equipment to the ARNG and Army Reserve. That's real progress and we are delighted. However, even that great progress leaves the ARNG critically short.

ARNG EQUIPMENT REQUIREMENTS

Attached to this statement are Fact Sheets which discuss equipment requirements which to the best of our knowledge are either not included at all in Army equipment procurement programs, or are not included in sufficient quantities to equip ARNG at levels required for wartime. Our most urgent concerns are for the equipment items addressed in the following brief paragraphs:

AIR DEFENSE WEAPONS SYSTEMS

The ARNG includes eight combat divisions. In FY84 a ninth division will be added, and a tenth division will be added in FY85.

There are no deployable (in our opinion) air defense guns in the ARNG. Twelve Chaparral missile systems will enter the ARNG in September 1984. Because of the Army's inability to equip ARNG units with Redeye and Stinger portable air defense missiles, the personnel who are supposed to man such weapons in ARNG units have been deleted from ARNG Tables of Organization and Equipment. It is our considered opinion that in September 1984 there will be only 12 deployable air defense weapons in the entire ARNG. Our information is that the Army currently is programming the procurement of 97 Chaparral fire units in FY88 for ARNG units. After those fire units are delivered to the ARNG in FY90, the ARNG will still be short 88 fire units.

Last year the Congress authorized and appropriated $38 million for product improvement (PIVAD) of 288 Vulcan Air Defense Guns. These weapons are intended for issue to ARNG units as the new Sergeant York Division Air Defense (DIVAD) guns enter the active Army. Recently the Sergeant York gun has been the subject of misleading news stories. It is true that there has been a slippage of about six months in current delivery of the Sergeant York. However, the Army and the contractor have agreed upon a revised delivery schedule which will complete delivery on the original target date. Any curtailment of procurement of Sergeant York guns for the active Army would preclude delivery of the PIVAD to the ARNG. We urge that the Sergeant York program not be slowed or curtailed in any way.

ATTACK HELICOPTERS

Our information is that 1,961 attack helicopters are required to fully equip all of the Total Army's attack helicopter units. After the AH-1G models have been converted to the AH-1S modernized version and after the currently programed procurement of 515 AH-64 attack helicopters is completed in FY89, the Army will have received 1,587 modern attack helicopters, leaving the total Army short 374 modern attack helicopters. The ARNG share of that shortage will be 220.

FIXED WING AIRCRAFT

The ARNG has a validated requirement for modern fixed wing administrative aircraft. Considering the U-21s and C-12s on hand or programmed for issue to the ARNG as the result of past congressional add-ons, the ARNG is short 59 modern aircraft. The authorizing and funding of 6 C-12 aircraft for the Army in FY85 would permit the Army to issue 6 U-21 aircraft to the ARNG. The U-21 is well suited for the ARNG requirement.

TOW MISSILE CARRIERS

The Bradley Fighting Vehicle is an outstanding fighting vehicle and is the fighting vehicle which is required to accompany the M-1 Tank on the battlefield. The Army is programing and issuing both M-1s and Bradley's in ARNG units which roundout active Army units which are equipped with M-1s and Bradleys. This is an outstanding example of Army policy of equipping ARNG units on the basis of scheduled deployment time even if the result is that ARNG units receive modern equipment ahead of active Army units. But although more than two-thirds of the ARNG is scheduled to deploy to Europe within 60 days after mobilization, most of the combat units will never be equipped with Bradley Fighting Vehicles. With the exception of a very few units, ARNG combat units are equipped with older systems, consisting of TOW missile systems mounted either on jeeps or pintle-mounted on the top of armored personnel carriers. When these weapons systems are exposed to enemy fire, the crew members must either take cover or take heavy casualties. In either event the opportunity to kill enemy tanks is lost.

There are 515 armored personnel carrier (M-113) pintle mounted TOW systems in the ARNG. These weapons could be upgraded to the M-901 Improved TOW Vehicle configuration at an estimated $108 million-$210,000 per weapon. Earlier the Department of the Army agreed to seek a $63 million supplemental appropriation to convert 300 M-113 pintle mounted TOW carriers to the M-901 ITV configuration. Regrettably, the unprogrammed cost of the Grenada and Lebanon operations forced the cancellation of the request for a supplemental appropriation.

FIRE SUPPORT SYSTEMS

Tactical Fire Direction Systems (TACFIRE) has been authorized for active Army and ARNG roundout field artillery battalions only. Consequently most ARNG field artillery battalions lack an effective fire support system to coordinate fires of their organic batteries. All active Army and ARNG field artillery firing batteries are programed to receive the AN/GYK-29 battery computer system (BCS). We are advised that the BCS can be converted to a battalion fire support system needed to meet battalion field artillery fire support requirements. We estimate the provision of $8 million for research and development of the battalion fire support system, followed by authorization and funding of about $40 million, could equip 160 ARNG field artillery battalions with an effective fire support system.

ARNG GROUND COMBAT EQUIPMENT

In the fiscal year 1982 Defense Authorization Bill the Congress announced its intent to provide $400 million for ARNG ground combat equipment over the following several years. In 1982 $50 million was provided. In fiscal year 1983 another $50 million was provided, and in fiscal year 1984 $100 million was authorized and funded. Shortages continue to exist in howitzers, armored vehicle launched bridges, mortar carriers, and command post vehicles, but the most critical combat equipment shortages exist in trucks, communications equipment and tactical automatic data processing equipment.

MEDICAL EQUIPMENT

The ARNG has on hand the required 7,793 individual surgical sets. However, missing or obsolete elements of the sets are estimated to cost $2 million. In addition, all of the sets verge on the obsolete. The authorization and funding of $8 million would permit the sets to be replaced with full sets of modern medical equipment.

GROUND WEAPONS SIMULATORS

Modern sophisticated weapons are often referred to as force multipliers. Modern sophisticated state-of-the-art training devices and simulators can be training multipliers. The ability of the ARNG to train its units to required levels of combat readiness is severely limited by the shortages of time, equipment facilities (e.g., ranges and outdoor training areas), and the high cost of munitions.

Army training devices, particularly simulators, are designed for use at major training centers with maximum utilization by many soldiers. The ARNG needs low cost simulators and devices designed with the intent of utilizing issue equipment as the most costly part of the training device.

ANG EQUIPMENT REQUIREMENTS

The NGAUS has for several years suggested that ANG flying units should be equipped at the same Primary Aircraft Authorization levels as the active Air Force. We are pleased that the Air Force has been "robusting" ANG units by bringing their PAA levels up to the PAA levels of tactical fighter units of the active Air Force. During fiscal year 1983 one A-7 squadron was increased from 18 to 24 fighters, and in fiscal year 1985 one squadron of F-4C's is programed to be increased from 18 to 24. This robusting is made possible by congressional action in approving the procurement of new fighters for the Air Force and by the designation of specific F-16 procurement for the ANG.

FIGHTER AIRCRAFT—TACTICAL AND INTERCEPTOR

The ANG contributes 68 percent of the total air defense fighter interceptor force. However, the more than 24-year-old F-106s are slowly being replaced with the more than 18 year old F-4C's and F-4D's. The F-4 is, at best, an interim replacement for the F-106 and is much more expensive to operate and much less capable than the F-15.

Just to sustain the present total Air Force structure of 36 tactical fighter wings, 234 aircraft must be produced each year (after the present 118 ANG fighter shortage is filled). Only 144 F-16s and 36 F-15s will be produced in fiscal year 1984. Shortages will increase.

C-130H TACTICAL AIRLIFT AIRCRAFT

Modernization of the ANG C-130 fleet must continue because:

There is no planned replacement of the C-130 in the tactical airlift role.

The recent DOD decision to buy C-5/KC-10 strategic airlifters does not remedy the shortfall of intratheater airlift.

The USAF recognizes a shortage of 28 C-130 aircraft including 14 in the active Backup Aircraft Inventory. However, there is no plan to procure new C-130s in fiscal year 1985.

The C-130A's of the ANG lack the capability to meet the airlift requirements of the total Air Force.

The ANG has the capability to add more than 32 C-130s to its tactical airlift fleet by increasing the PAA of units from 8 to 16 (the same as the Air Force units).

WEAPONS SYSTEMS UPGRADE

Recognizing that the ANG will of necessity be flying older less modern aircraft while the active force will be in the main be flying the modern sophisticated aircraft, we believe that older ANG aircraft should be upgraded. Upgrading of older aircraft extends the useful combat life of the aircraft and maximizes the combat potential achieved from the original investment. Following are a series of weapons systems upgrades which will multiply the effectiveness of the original investment in the weapons systems:

FORWARD LOOKING INFRARED RADAR (FLIR)

Each of the ANG A-7 units has been tasked to perform night attack missions. As the result of this tasking, a Mission Element Need Statement has validated the requirement to equip all A-7 squadrons with FLIR. Congress has authorized the procurement and installation of FLIR for the two ANG A-7 squadrons which are assigned to the Central Command Rapid Deployment Force. However, this under-the-weather night attack system is required for the remaining 11 ANG A-7 squadrons.

JT--3D FOR THE KC-135 STRATEGIC TANKER

Congress has in the past years authorized and funded the reengining of all but one ANG KC-135 strategic tanker a/c. Reengining the ANG KC-135 fleet with JT-3D engines provides near term relief from the problems caused by the noisy, smoky, low performance J-57 engine while the Air Force reengines its KC-135 fleet with the more expensive but most modern and fuel efficient CFM-56 engines.

F-4 LOW SMOKE ENGINE MODIFICATION

Congress has authorized and funded the highly effective low smoke modification of the J-79 engines of the ANG RF-4 fleet. There are 239 F-4D aircraft in the ANG inventory. The combat effectiveness and survivability of these aircraft would be significantly increased if their engines were low smoke modified.

ARN-101 DIGITAL AVIONICS SYSTEMS

The RF-4C aircraft of the active Air Force have been upgraded by the installation of the ARN-101 Digital Avionics System. Congress authorized and funded for 40 ARN-101 digital avionics systems for ANG RF-4 reconnaissance aircraft. Currently the ANG RF-4C avionics mean time between failure rate is 16 hours. The rate for the ARN-101 system is 261 hours. Installation of the ARN-101 on the ANG RF-4 fleet would save an estimated 2000 maintenance man hour per year producing an annual saving of almost $4 million annually while significantly increasing combat capability and survivability.

A-7/F-4 WEAPONS SYSTEMS UPGRADE

A-7/F-4 fighter aircraft will remain in the ANG inventory with an assigned combat responsibility into the 1990s. In our judgment, the following upgrades are required to maintain aircraft combat capability and survivability:

Installation of an AIM 9L/M missile system with an off-bore sight capability.

Installation of digital radar warning receivers, improved chaff dispensers, electronic counter-measure systems, and have-quick/anti-jam radios.

Replacement of computers in the A-7 fighters.

COMMUNICATIONS EQUIPMENT

ANG combat communications units (70 percent of the total Air Force capability) and tactical air control units (55 percent of the total Air Force capability) are all tasked for rapid worldwide deployment. But the shortage of modern communications-electronic and meterological equipment is estimated to be $62 million. The most serious shortages could be eliminated if $32 million were authorized and funded for this purpose.

MISSION SUPPORT AIRCRAFT

Reliable mission support aircraft are essential for the production of combat readiness in the flying squadrons of the ANG. The antiquated C-131 aircraft which are currently provided for this mission are neither reliable nor safe. The Director of the ANG has stated in testimony that a combination of C-12s, C-130s, and C-9s could provide a more reliable and safer support fleet.

In addition we understand that the Air Force plans to lease four Lear Jet aircraft for the Mission Support function of Detachment #1, DCANG in FY86. We are advised that a net savings of $700,000 per year could be achieved if those aircraft were leased in FY85.

FOREIGN MILITARY SALES CREDIT

Mr. Chairman, from time to time Army and Air Force equipment is diverted to friendly foreign nations through the Foreign Military Sales Program. We understand and support the FMS program. However, unless the Congress specifically provides that the funds realized from sales are returned to the Army and Air Force procurement accounts, the result is a net loss of Army and Air Force equipment which could otherwise be made available to the Guard and Reserve. We urge that the FMS program be structured in such a way that the funds derived from sales are returned directly to the Army and Air Force as additives to the established procurement program.

SUMMARY

Mr. Chairman, while expressing our pleasure at the efforts of the Army and Air Force to fully equip ARNG and ANG with modern equipment we recognize that the dollars allotted to ground conventional warfare are far less than required. We are grateful to the Congress for the very strong support over and above the budget request for the modernization of the ARNG and ANG. However, we cannot be satisfied until DOD programing for the procurement of equipment includes modern equipment for all units of the National Guard and Reserves.

We urge that your subcommittee favorably consider authorizing the procurement of the following items over and above the procurement requested by the President's budget:

ARNG:	*Million*
20 Chapparal fire units	$40
Conversion of AH-1G to AH-1S (Mod) helicopters	46
Long lead parts for 36 AH-64 helicopters	31
Six C-12 aircraft	12
Conversion of 300 M-113 TOW to M-901 ITV	63
RDT&E for fire support systems	8
Army ground equipment	100
Medical equipment	8
RDT&E for ground weapon simulators	2
Subtotal	310
ANG:	
24 F-15's for the Air Force	649.6
24 F-16's for the ANG	460
Eight C-130H's for the ANG	190
FLIR—two squadron sets (24)	92
JT-3D for eight ANG KC-135's	33
Low smoke modification for 150 F-4 engines	15
ARN-101 digital avionics systems (40)	23
A-7/F-4 weapons systems upgrade	50
Communications equipment	32
Procure six C-12's and lease four Lear Jets	20
Total	915.6

Mr. Chairman, we are aware of the fact that it appears that we ask much for the Army and Air National Guard. However, it is our view that much is asked of the Army and Air National Guard. For our part we want to be capable of delivering the combat readiness that is asked of us.

AIR NATIONAL GUARD FACTSHEETS

F-15'S FOR THE ANG

1. General

At the end of 1983, the ANG tactical fighter force was short 118 aircraft from the Air Force level of primary authorized aircraft (PAA).

If one squadron of 24 PAA were added to the ANG inventory each year, it would be 1990 before ANG units would be "fleshed out" to the most economically-effective, combat-capable force (assuming no attrition or retirement of any present aircraft in the inventory).

The ANG tactical fighter force contributes 25 percent of the total tactical fighters. In 1990, the age of ANG A-7s will average 17 years, and the age of F-4s will average 23 years, requiring expensive weapons systems enhancements now to keep those aircraft a viable, combat-capable and survivable weapons system force.

To sustain the present total Air Force structure of 36 tactical fighter wings, 234 aircraft must be produced for the Air Force each year (after the present 118 ANG shortages are filled!). Only 144 F-106s and 36 F-15s will be produced in fiscal year 1984, so shortages will increase. Production must be increased to over 260 per year (+80) to "flesh out" and maintain a 36-wing force. (The Soviets produce over 1,300 fighters per year!)

The ANG air defense force contributes 68 percent of the total air defense fighters. However, the ANG fighter force consists of F-106s (over 24-years-old) which are slowly being replaced by F-4C/D's (over 18-years-old). The active Air Force (32 percent of the force) will be modernized completely with the F-15 by fiscal year 1986. The F-4 is, at best, an interim replacement for the F-106. It is considerably more expensive to operate and considerably less capable against the threat than the F-15.

ANG units, with their highly-experienced aircraft and exceptionally well-qualified and stable maintenance personnel, are ideally suited to being equipped with the world's premier high-technology fighter, the F-15. Additionally, the ANG can operate the F-15s at approximately one-third less cost than the actives can operate them.

The Soviets have nearly three times as many fighters as the USAF. The "Flanker and Fulcrum" (F-15 and F-16 equivalents) are in production and it is estimated their production alone may soon be over 500 per year.

2. Specifics

The capabilities of the F-15 are greater than any other in-production fighter, and can be procured at approximately the same cost when efficient production and attrition rates are considered.

Increasing the production rate from 36 per year to 72 per year would result in a savings of 26 percent ($36.6 million down to $26 million). Increasing the production rate to the optimum rate of 96 per year would result in a savings of 30 percent ($36.6 million down to $24 million). Additional savings can be acquired through multi-year contracting.

The F-15 is the safest fighter in history. The cumulative destroyed rate comparison through 31 August 1983 is: F-100=16.0, F-16=10.8, F-15=4.3 (less attrition=investment saved).

The F-15C/D has the best fully-mission-capable rate (in excess of 70 percent) in the tactical inventory (1981, 1982, 1983).

The F-15 has the best growth capability (the ability to incorporate new technology without extensive modification) among USAF fighters, which extends longevity.

The F-15 is much more capable than the programed AMRAAM-equipped F-16 in air superiority mission. The F-15:

Has double the radar range.

Has eight times the radar search volume.

Has existing beyond-visual-range capability with the AIM-7 and will utilize full AMRAAM capability.

Has radar advantages which allow the F-15 to operate as a "Mini-AWACS" if needed.

Has been produced to operate with OTH-B radar.

The F-15 recently was chosen by the Air Force as the Dual-Role Fighter. Early ramp up of production will allow even more savings in the basic production F-15.

3. NAGUS recommendations

That the Congress authorize and fund the original Air Force five-year defense plan (1983) to procure 72 F-15C/D's to allow the transfer of 24 additional F-15A/B's to the ANG.

That the Congress authorize and fund the advance procurement of 96 F-15 aircraft for fiscal year 1986 so 48 additional F-15A/B's will be transferred to the ANG.

F-16'S FOR THE ANG

1. General

At the end of 1983, the ANG tactical fighter force was short 118 aircraft from the Air Force level of primary authorized aircraft (PAA).

If one squadron of 24 PAA were added to the ANG inventory each year, it would be 1990 before ANG units would be "fleshed out" to the most economically-effective, combat-capable force (assuming no attrition or retirement of any present aircraft in the inventory).

The ANG tactical fighter force contributes 25 percent of the total tactical fighters. In 1990, the age of ANG A-7s will average 17 years, and the age of the F-4s will average 23 years, requiring expensive weapons systems enhancements now, to keep those aircraft a viable, combat-capable and survivable weapons system force.

To sustain the present total Air Force structure of 36 tactical fighter wings, 234 aircraft must be produced for the Air Force each year (after the present 118 ANG shortages are filled!). Only 144 F-16s and 36 F-15s will be produced in FY84, so shortages will increase. Production must be increased to over 260 per year (+80) to "flesh out" and maintain a 36-wing force. (The Soviets product over 1,300 fighters per year!)

The Soviets have nearly three times as many fighters as the USAF. The "Flanker and Fulcrum" (F-15 and F-16 equivalents) are in production and it is estimated their production alone may soon be over 500 per year.

2. Specifics

The Congress has added on procurement funds for 24 ANG F-16s in FY83 and 24 F-16s in FY84, plus advance procurement for 30 additional F-16s for FY85 to continue the modernization of reserve forces.

The FY85 DOD Budget requests funds for the purchase of 150 F-16s and 48 F-15s (198). However, new production must be increased to 260 to "flesh out" and maintain a 36-wing force.

As the F-16 enters the ANG, the fighters that it replaces will not be "traded-in". F-4s and A-7s will be used to increase the PAA of other units until all units are equipped with the same PAA (24+2) as the active Air Force.

3. NGAUS recommendations

That the Congress authorize and fund 48 F-16s for the Air National Guard in FY85.

That the Congress authorize and find the advance procurement of 48 F-16s for the Air National Guard in FY86.

C-130H TACTICAL AIRLIFT AIRCRAFT

1. General

The airlift units of the Air National Guard provide 30 percent of the Air Force's tactical airlift assets and services.

The C-130A tactical airlift aircraft now average over 26 years of age and are the only "A" models flying today. The Royal Australian Air Force (RAAF) elected to retire the 12 C-130A's and have replaced them with C-130H's.

The C-130A last was produced in 1959; thus, it has many out-of-production systems and components. For rotational assignments (TDY's) overseas, all C-130A spare parts and equipment must be carried onboard to support these aircraft as there are no en route staging areas or C-130A spare parts pools anywhere except the CONUS.

Air Force records show the C-130A's to be much more costly per flight hour/operation than the modern C-130H's. United States Air Force data currently show the annual cost of depot maintenance of the C-130A's to be $178,579 per aircraft compared to $82,956 per aircraft for the C-130H. These costs do not reflect the added loss of airlift due to the extensive downtime required for the unscheduled structural repairs of the C-130A's wings.

A combinatioin of corrosion and fatigue of the outer and center wings of the C-130A require continual inspection and costly repairs and/or replacement of structural members to keep the aircraft in a flyable condition. Current and contempiated Air Force C-130A wing structural inspections will require a continual structural repair program through the 1980s.

The C-130A's airlift capability cannot match the C-130H, which offers 26 percent more payload, 52 percent more range and 11 percent higher cruise speed. Further degradation can be expected as heavier structural repairs are required in the future. C-130A units cannot train for many missions normally required in combat.

2. Specifics

In FY84 the modernization of the Air National Guard must continue because:

There is no planned replacement of the C-130 in the tactical airlift role.

The recent DoD decision to buy C-5/KC-10 strategic airlifters does not remedy the shortfall of intratheater airlift.

The USAF recognizes a shortfall of 28 C-130 aircraft, including 14 in the active force Backup Aircraft Inventory (BAI); however, there is no plan to procure new C-130s in FY85.

The C-130A's lack the capability to meet the airlift requirements of the Air National Guard and the Total Force.

3. NGAUS recommendation

That the Congress add on funding ($380 million) for procurement in FY85 of 18 C-130H's for the ANG to continue to replace C-130A's (40 remain in the ANG inventory).

FORWARD LOOKING INFRARED RADAR (FLIR) SYSTEM

1. General

During 1979, all ANG A-7 units were assigned a night attack mission. Subsequently, a Mission Element Need Statement (MENS) validated an ANG requirement for an A-7 night attack system. The requirement has appeared in each year's Program Objective Memorandum (POM), yet remains unfunded.

General Creech, Commander, TAC, said recently that the greatest weakness in TAC AIR is the "inability to fight at night." FLIR would allow ANG A-7s to increase their combat capability from 8 to 10 hours per day to 22 or more hours per day! (Armed Forces Journal, Jan. 1983).

The FLIR modification for A-7 aircraft invovles relatively minor changes in wiring and hardware. A FLIR pod is hung on an external wing pylon; the infrared image is displayed on the pilot's Head Up Display (HUD). Magnification of the FLIR field of view permits precise aiming index placing, resulting in weapons delivery accuracy equal to, or better than, daytime accuracy. The system is compatible with the current inventory of munitions, and is an off-the-shelf item currently in use on U.S. Navy A-7E's. The system has been evaluated and endorsed by over 200 Air Force and Air National Guard pilots.

ANG A-7 units cannot accomplish their assigned night attack mission without FLIR. Funds have been authorized by Congress to procure this udner-the-wether night attack system for two ANG A-7 squadrons, more than doubling their combat capability. Additional funds are required to continue FLIR procurement.

2. NGAUS recommendation

That the Congress add on approximately $92 million in fiscal year 1985 for the procurement of 24 FLIR under-the-weather night attack systems for two ANG A-7 squadrons.

KC-135 REENGINING

1. General

The KC-135A fleet originally was procured to support only the strategic bomber force, but now is tasked to support over 11,000 U.S. and NATO recievers composed of bomber, tactical and general purpose aircraft. Consequently, total refueling requirements far exceed present KC-135A fleet capability. Reengining markedly will improve the productivity of the KC-135 tanker fleet, will eliminate the rapidly-rising maintenance costs of the present aging and inefficient J-57 engine and will increase the capability of this valuable and unique tanker asset that has over 70 percent of its useful life still ahead.

Reengining the KC-135A also will reduce noise levels, thereby helping to alleviate community relations problems of Air National Guard, Air Force Reserve and U.S. Air Force bases located in urban areas. Air pollution and engine smoke also would be reduced significantly by the new engines.

Since 1978, Congress has strongly supported reengining the KC-135 with the modern, fuel-efficient CFM-56 engine, which will provide an effective solution to the above-cited problems of mission capability and excessive maintenance costs of the Pacer Grade overhaul program.It also will improve community relations. The first Air Force unit aircraft have been completed and planned production could permit 100 KC-135s to be mission-ready by 1986.

Because certain ANG tanker unit are experiencing acute community relations problems caused by the noisy, smoky, low-performance J-57 engine now installed in the KC-135, near-term relief is being provided by the interim installation of the commercially-proven JT-3D engine. It has been installed on 65 ANG KC-135 tankers with excellent results, eliminating community problems and obtaining more than the planned increase in operational capability.

Congress approved $125.5 million in fiscal year 1984 to reengine 31 KC-135s with JT-3D's. This will complete all but one unit (with eight KC-135s) by the end of fiscal year 1984.

2. Specifics

JT3D advantages over J-57—takeoff thrust 18,000 vs. 13,750 (WET); fuel consumption 12 percent less; noise reduced 60 percent; emissions reduced 90 percent; reverse thrust capability; up to 400 percent improved reliability; 137 donor aircraft identified in U.S. and Canada; 80 percent of JT-3D parts federally stock listed; JT-3D engine parts 80 percent common with USAF TF-33 engines; JT-3D tooling over 90 percent common with USAF TF-33 engines.

3. NGAUS recommendation

That the Congress add on approximately $32.32 million in FY84 for the FY85 procurement of eight sets of JT-3D engines for ANG KC-135 tankers to complete reengining of all ANG KC-135 aircraft. (Includes $16.24 million for installation.)

ANG F-4 LOW-SMOKE ENGINE

1. General

The F-4 tactical fighter will be in the ANG inventory into the 1990s.

The production of newer tactical fighters (F-15 and F-16) has not reached a level high enough to even maintain the present total Air Force 36-wing force, let alone to modernize the force.

2. Specifics

The J-79 engines used in the F-4 aircraft leave a smoke trail which can be seen even before a visual contact is made with the aircraft itself, thus decreasing the survivability and combat effectiveness of the F-4.

A low-smoke modification of the J-79 engine has been proven very successful in nearly eliminating the tell-tale smoke trail emitted from an unmodified engine.

Funding has been provided for the modification of 394 engines (six RF-4C units and one F-4D unit). The program is on schedule.

Congress added funds to the FY84 DoD Appropriations Act to modify two more F-4D unit aircraft. There is a need to modify 150 more engines of those F-4D aircraft programmed to be available for deployment into the 1990s.

3. NGAUS recommendation

That the Congress add on funds to the FY85 Defense Budget for the low-smoke modification of 150 ANG F-4d engines.

ARN-101 DIGITAL AVIONICS SYSTEM FOR ANG RF-4C'S

1. General

The ANG is assigned more than 50 percent of the manned tactical reconnaissance forces of the United States Air Force (USAF); no change is programmed in the out years.

The 155 ANG RF-4C's are viable tactical reconnaissance platforms beyond the year 2000, but are limited to daytime operations due to obsolete avionics. To effectively accomplish their assigned combat mission, particularly during night/adverse weather conditions, ANG aircrews need the ARN-101 for use in the ANG RF-4C's.

Active RF-4C units have been modernized with the ARN-101, an up-to-date digital avionics system.

2. Specifics

Current ANG RF-4 avionics mean time between failure (MTBF) is 16 hours. The ARN-101 MTBF is 261 hours. Thus, a 1,600 percent increase in reliability can be expected with the ARN-101.

If the entire ANG RF-4 fleet were equipped with the ARN-101, an approximate annual reduction of 2,000 maintenance manhours could be achieved—saving nearly $4 million per year.

Installation of the ARN-101 could reduce ANG RF-4 sorties lost due to avionics factors from 10.6 percent to 1.1 percent.

Active force F-4/RF-4s are equipped with the ARN-101; adding the system to ANG aircraft would allow an interoperability of avionics/navigation systems, common maintenance and a single logistics chain.

A delay in the procurement of the ARN-101 for the ANG would only decrease the economic savings inherent in the use of the system.

3. NGAUS recommendation

That the Congress add on funding in FY85 for the immediate procurement of 40 ARN-101 digital avionics systems for ANG RF-4C units ($16 million procurement—$6.8 million operations and maintenance).

ANG TACTICAL FIGHTER UPGRADE

1. General

ANG F-4s and A-7s will remain in the inventory with an assigned combat responsibility into the 1990s. These aircraft will be over 20 years old by that time. To be an effective and survivable weapons system, they will need upgrading with maximum systems enhancements.

2. Specifics

A minimum defensive capability requires the installation of an AIM 9L/M missile system with an off-boresight capability.

Aircraft must have a minimum electronic combat capability, to include the installation of digital radar warning receivers, improved chaff dispensers (ALE-40), electronic counter-measure systems (ALQ-119/131) and quick/antijam radios.

A-7 tactical computers are 99.64 percent programmed. These computers must be replaced to allow software and hardware updates to make possible a significant increase in bombing accuracy.

3. NGAUS recommendation

That the Congress add on $50 million in FY85 for the beginning of an upgrade program for ANG A-7 and F-4 tactical fighters that will be in the inventory into the 1990s.

COMMUNICATIONS

1. General

ANG combat communications units (70 percent of total Air Force capability) and tactical air control units (55 percent of Air Force capability) all are tasked for rapid worldwide deployment.

These units are equipped with outdated, non-compatible equipment, usable only because of superior ANG maintenance capability. However, enlistment of critically-skilled personnel is becoming a problem. This antiquated tube-type equipment impacts adversely on enlistments in critical-skill areas.

The shortfall of communications-electronics equipment for ANG units is critical.

2. Specifics

The ANG communications-electronic and meteorological equipment shortage amounts to $61.8 million. The most urgent shortages could be eliminated if $31.2 million were provided for procurement in FY85.

3. NGAUS recommendation

That the Congress add on funding in FY85 of $31.2 million for compatible state-of-the-art communications equipment for ANG units tasked for rapid worldwide deployment in support of Air Force contingencies.

REPLACEMENT OF C-131 MISSION SUPPORT AIRCRAFT

1. General

The antiquated piston-engined C-131 mission support aircraft being operated by 33 states are expensive to operate, difficult to maintain, restricted in operations by inadequate avionics and available power, and are generally unreliable aircraft.

Congress added $11.8 million to the FY84 DoD Budget to procure six C-12 aircraft to begin replacing the 33 aged ANG C-131 mission support aircraft.

2. Specifics

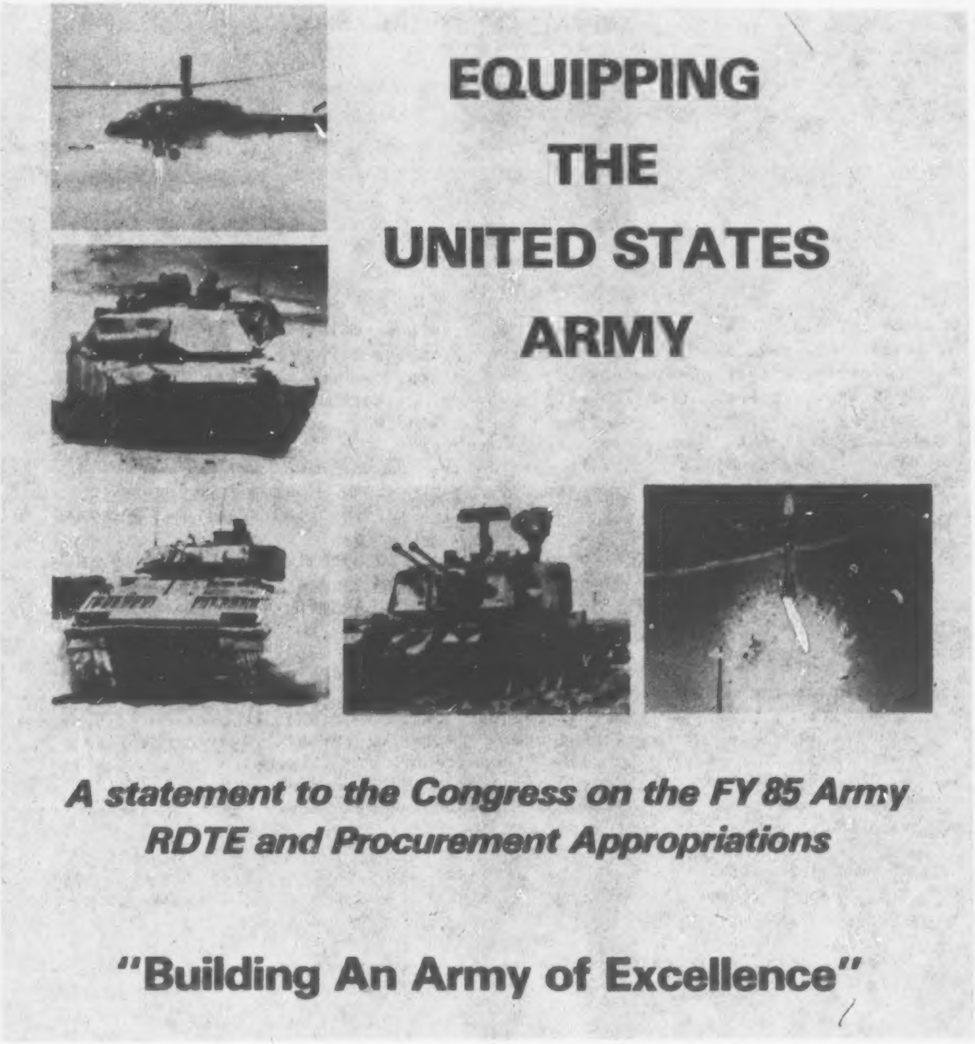
There are five possible alternatives to the replacement of the C-131: procure the C-12; procure the C12J (+11 Passengers, +3,900 useful weight capacity); replace C-131 piston engines with T-56 turbo prop engines and upgrade C-131 avionics with state-of-the-art equipment; utilize surplus ANG C-130s to replace C-131s; take advantage of any or all of the above alternatives.

3. NGAUS recommendations

That the Congress add on funds to procure 12 C–12J aircraft in FY85 ($36 million).

That the U.S. Air Force ascertain whether the C–131 engine and avionics replacement are economically feasible.

[The prepared statement by Dr. J. R. Sculley and Lt. Gen. James H. Merryman: "Equipping the U.S. Army; a statement of the Congress on the FY85 Army RDTE and Procurement Appropriations" follows:]



EQUIPPING THE UNITED STATES ARMY

A statement to the Congress on the FY 85 Army RDTE and Procurement Appropriations

"Building An Army of Excellence"

DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF
FOR RESEARCH, DEVELOPMENT, AND ACQUISITION
WASHINGTON, DC 20310

REPLY TO
ATTENTION OF

February 15, 1984

Members of Congress:

In building an Army of Excellence, we have been working hard to improve our near-term readiness, to modernize the force and to pursue research and development that provides substantial return. We are accomplishing this by buying equipment currently being produced, product-improving such equipment, and by developing and procuring new equipment when needed to counter a changing threat. Out goal is to equip our Army in the most affordable way so that it can handle any task the nation assigns it.

This prepared statement explains how we are improving our readiness through modernization, and why we must do so without delay. The introduction, which requires about ten minutes to read, provides an overview of the threat we face, our research, development and acquisition objectives, and our personal views on many contemporary issues attendant to the materiel acquisition process.

Following the introduction are several sections that group our hardware systems according to their roles on the battlefield. We call these groups "mission areas". The importance of the mission areas cannot be overstated because our requirements for developing new or improving existing systems originate from analysis, designed to reveal the strengths and weaknesses, of these mission areas. We hope that our discussion of each mission area will make the Army's request for each system more meaningful by describing how those systems will make our Army more effective on the battlefield.

In addition to this statement, we are also making available to you the "1984 Army Weapon Systems" handbook, a consolidated reference for a number of our weapon systems.

We are honored to represent our Army and look forward to working with you in this session of the 98th Congress.

James H Merryman
JAMES H. MERRYMAN
Lieutenant General, GS
Deputy Chief of Staff for Research,
Development, and Acquisition

JR Sculley
J. R. SCULLEY
Assistant Secretary of the Army
(Research, Development and Acquisition)

INTRODUCTION

It is a privilege to appear before this committee once again to explain how our Army proposes to arm and equip itself. We look forward to working with you to meet our common goal--that of providing an Army of excellence, an Army that can fight anywhere and win.

While our focus is necessarily on defense, we understand and appreciate that Congress must fund for many other programs which are also vital to the well-being of our country and its citizens. The Army is determined to assist you in this responsibility by doing the best we can to effectively and efficiently manage the resources you make available to us while equipping and modernizing a first-rate Army of which all Americans can be proud.

For the past two years we have referred to the budget increases represented by the FY81 supplemental and FY82 amendment. We described those increments as important first steps toward resolving significant deficiencies in both the quantity and quality of our arms and equipment. The FY83 and FY84 budgets reinforced that trend with funding increases that enabled us to continue to improve the production efficiency of our most critical items. This favorable trend must be continued if we are to insure that the gap that exists between Soviet forces and ourselves does not widen.

Our FY85 combined Procurement and RDTE request is for $26.05 billion. We will use these dollars to continue to improve the Army's near-term readiness posture, to modernize the total force, and to support research and development.

The Army's Readiness Goal is to have a Total Army prepared for the "Three Days of War": to deter the day before war, to fight and win the day of war, and to terminate conflict in such a manner that on the day after war the United States and its allies will have an acceptable level of security. Without near-term readiness, this goal would go unmet. We do not know when or where our nation might be confronted or challenged by an enemy. We do know that our Army must be prepared to defend the nation and our national interests whenever and wherever they are threatened.

The Army's Materiel Goal supports the Readiness goal in that we must have a Total Army equipped and sustained to win any land battle. We have made progress in meeting our requirements; however, today our Army is still short a large amount of the materiel which is needed to bring units up to full strength and to fill war reserve stocks. Units in the Active Army, National Guard, and Army Reserve still do not have all the arms and equipment that they require. Reduction of these materiel shortages in the force must take the highest priority. To accomplish this, we must continue to procure additional quantities of equipment--currently fielded, product-improved, and new--for both the Active and Reserve Components as quickly as possible.

The requirement to equip our Army takes on increased importance when one considers the quantitative advantage enjoyed by the Soviets in both arms and equipment. They have produced and continue to produce large quantities of equipment at enormous cost to their economy. Today the Soviets outinvest and outproduce us by about a two-to-one margin in most categories of military equipment. For example, over the past five years their powerful industrial base has allowed them to produce 2,700 tanks per year to our 600, 5400 personnel carriers per year to our 700, and 720 helicopters to our 180.

While the Soviet numerical advantage dictates that we buy more equipment for our Army, it also tells us that we must modernize. Further, an additional threat posed by the ever-increasing quality of Soviet weapons dictates a need to accelerate our modernization effort lest we continue to be faced with simultaneous deficiencies in both quantity and quality. To put that modernization requirement in proper perspective, it is necessary to recall what has happened in the past.

During the late 1960's and early 1970's, the conflict in Southeast Asia diverted the nation's attention and resources. The Soviet Union exploited this opportunity to mount the most massive modernization effort any nation has ever undertaken in peacetime. During the decade of the 1970's, total Soviet expenditures for procurement exceeded our outlays by approximately 75 percent, and their research and development expenditures were approximately 50 percent higher. The result was predictable. The combination of high procurement rates and sustained investment in R&D has closed and, in many cases, eliminated the quality advantage that we had for many years.

The Soviets have often fielded two, and sometimes three, generations of equipment while we fielded one. As a result, much of what they have in the field today is newer than deployed US equipment and embodies current technology. For example, the T62 Soviet and M60 series US tanks were fielded in the same approximate timeframe. Since then, the Soviets have deployed at least three entirely new tanks, the T-64, the T-72, and the T-80, as well as developing product-improved variations of each. During this same timeframe, we have modified the M60 twice and are only now fielding the M1 Abrams tank.

Attack helicopters are another example. We led the way in the development of attack helicopters with the AH1G Cobra during the war in Southeast Asia. Fielded in the late 1960's, product improved to the AH1S model, it will see service into the 1990's. However, it does not have the capability, nor is it possible to upgrade it to the capability, of the current Soviet HIND attack helicopter. The HIND has a greater range, is faster, more maneuverable and has more payload capacity than the newest version of our Cobra. The HIND is also found in greater numbers on the battlefield. We have developed a new attack helicopter, the AH-64 Apache, which is superior to the HIND. However, its first delivery to the Army is not scheduled until early 1984.

Yet another example of a system that is qualitatively inferior to its Soviet counterpart is the M113 armored personnel carrier. The M113 was first built in 1962 and is a transportation system rather than a fighting vehicle. Its only armament is an unstabilized machine gun. The Soviet BMP, with which the M113 is often compared, is actually an armored fighting vehicle and has far better battlefield mobility than the M113. It is armed with a 73mm gun and an antitank missile, and has an overpressure system for operations in a chemically environment. In addition, an improved version of this fighting vehicle with a 30mm gun, the BMP 1981, has been observed. It reportedly has been widely used in Afghanistan.

The tank, attack helicopter and fighting vehicle are but three examples of a growing list of systems where the Soviets moved ahead of us in quality in addition to quantity during the seventies. Considering the technological capability of this great nation, we find it totally unacceptable that our soldiers might have to fight with equipment that is inferior to that of a possible adversary. Fortunately, the means to make sure this will not be the case are at hand.

The Army's research and development efforts of the past decade have come to maturity. We pursued a program that would enable us to regain the qualitative edge, and we have accomplished that objective. Today, systems such as the M1 Abrams tank, the Bradley Fighting Vehicle (BFV), the Black Hawk helicopter, the Pershing II and the Stinger air defense missile are being fielded. Other systems such as the Multiple Launch Rocket System (MLRS), the Patriot air defense system, the SGT York air defense gun, and the Apache Attack Helicopter (AAH) are either in early fielding or are headed for full production. Still others are not far behind.

It is important to note that our modernization effort also applies to the Reserve Components. National Guard and Army Reserve units are receiving and will continue to receive new and improved systems that cover the full spectrum of their mission needs. A battalion of the North Carolina National Guard began receiving M1 tanks in July 1983. The same unit has also received their complement of the cavalry version of the Bradley Fighting Vehicle. Other systems such as Roland and Stinger air defense systems, utility helicopters, upgraded Cobra helicopters, and many other items are being issued to Reserve Component units.

We are proud of the systems that have been developed during the 1970's; however, it would be incorrect if we led you to believe that the Army's materiel acquisition philosophy dictates a new development program for every change in the threat. On the contrary, we recognize that we live in a world of constrained resources and must take maximum advantage of the investment we have made in fielded systems. To do this we have used, and will continue to use, product improvement programs that are designed to build on those systems that are already in the inventory.

The M60 series tank--a product of the late 1950's technology--is one example of evolutionary development through product improvement. Improvements that have been made to the basic M60 tank include engine changes that have upgraded reliability and maintainability, a stabilization system for shoot-on-the-move capability, and passive night sights to improve night vision. The latest version, the M60A3, incorporates a laser rangefinder, thermal sights which penetrate darkness and obscurants, and a ballistic computer which automatically inputs to the gun data such as range and moving target lead angle. The result is a 20-year-old tank design that continues to be a formidable weapon on today's battlefield.

The CH-47 Chinook medium-lift helicopter, which was fielded in 1962, is another example of our product improvement program. The modernization program currently underway will extend the useful life of the CH-47 fleet beyond the year 2000. The Chaparral and Hawk air defense systems, the TOW antiarmor missile, and the Cobra attack helicopter are but a few of many other systems that have had their operational capabilities upgraded and lifetimes extended by product improvement.

It must be recognized, however, that the improvement potential of any given system is limited, and that both technology and the threat continue to change. For example, some of our current air defense systems were simply not designed to function in the sophisticated electronic countermeasures (ECM) environment that the Soviets can create. These systems are also incapable of multiple target attack/track engagement operations. The technology that could provide a capability to operate in an ECM environment and attack/track multiple targets simply did not exist when the old systems were built. It was impractical to attempt to build it into them; therefore, we had to develop new, more capable weapons. For example, Patriot and Stinger, the products of the decade of successful research and development we referred to earlier, are ready to fill the gap where our older systems, Nike-Hercules and Redeye, were found to be inadequate, and where the potential for improvement had been exhausted.

Although we strongly believe that we should use our nation's technological strengths to counter the Soviet Union's quantitative advantage, you should be aware that our acquisition philosophy also considers the impact of "complexity" and "sophistication." Some contend that some of our new systems are too complex or sophisticated. Unfortunately, these terms are often mistakenly used synonomously. "Complex" by our dictionary translates to complicated and what is complicated in terms of operation or maintenance is to be avoided. Sophisticated equipment, on the other hand, takes advantage of the best features of advanced technology. Such sophisticated equipment can be made easy to operate and maintain. For example, most of us can remember when computers first came out and were the purview of scientists, mathematicians and engineers. Today the computer is common in the home and in the classroom, to include the early years of grade school. Today's home computer is certainly a sophisticated piece of equipment and although it may be considered complex because of its microcircuitry and software, it is accepted as very commonplace. This is because its operation is fast, simple and accurate, and repairs are normally accomplished with simple modular replacements. We try to apply the same logic in developing our military systems that range from a relatively simple laser rangefinder to the automatic search and track radar of the SGT York air defense gun. Our objective is to use technology to obtain greater simplicity for the operator and maintainer.

We also use technology to bring about a synergistic effect on the battlefield. This is because we have found the capability of our weapons used in combination is greater than the sum of their individual capabilities. For example, our fire direction system, TACFIRE, is an automatic data processing system that enables our artillery to be highly responsive to fire missions. The Firefinder counterbattery radar system can locate enemy artillery positions by backplotting the trajectories of projectiles while they are still in flight. In combination, TACFIRE and Firefinder can provide us with the enemy's location before the first incoming round hits. Thus, our artillery can bring fire to bear on the enemy before he can adjust fires or "shoot and scoot." Individually, both TACFIRE and Firefinder perform important functions in fire control and target acquisition. However, used together to engage highly mobile enemy artillery, the results are devastating. On the battlefield, systems such as these complement one another and make it possible for a small, high quality Army to defeat one of superior numbers.

It is true that sophistication increases the cost of our equipment. Therefore, we must insure that we do not ask for more than we require. On the other hand, we must use sophistication when it makes sense to achieve the necessary effectiveness and survivability in battle. For example, night vision and thermal imaging devices are expensive, and eliminating these from systems such as the M1 tank, the Bradley Fighting Vehicle, and the Apache Attack Helicopter would reduce our budget. To eliminate them however, would deprive our soldiers of a great advantage, i.e., being able to see on a dark or obscured battlefield. This is significant when one considers the fact that a battlefield is either dark or obscured 50 percent of the time.

Earlier in our testimony we expressed our appreciation for the support which the Congress has provided and stated our intention to efficiently manage the resources you provide. It is only right that the defense programs receive continued scrutiny. It is clearly our responsibility to make sure that we are spending the taxpayers' dollars as carefully as we can, and to see that the Army gets the best return on each dollar it invests in weapons and equipment.

We are taking several steps to improve our management of the Army acquistion process. Some of the actions we are taking include better planning, improved management information, greater use of multiyear contracting, improved risk analysis, linking cost estimates to the budget process, and better quality assurance management.

Better planning through our Long-Range Research, Development, and Acquisition Plan has resulted in greater program stability. The 15 year plan provides the Army's leadership a means by which to consider the future implications of current decisions. It facilitates the making of timely, logical, and economically sound decisions for the acquisition of materiel with a minimum of program disruption.

The Army's Program Management Control System (PMCS) provides improved management information. Twelve major systems have been brought under PMCS. Thirteen additional systems will be implemented this year. Each system is baselined for cost, schedule, performance, quantity, production capacity, and integrated logistics support requirements. The systems are tracked monthly to detect deviations from baselines which cannot be changed without formal approval by the Department of the Army. This adds stability to the program.

We have also begun a monthly program manager's status report for major systems designed to improve management information. It begins with the program mangager's candid assessment of where his program stands. The Army Staff then analyzes the report and takes necessary action on problem areas. A final report is then prepared for the Army's top leadership.

The Army has also initiated an expanded quarterly review of the cost, schedule, and performance variances of those systems included in the Congressional Selected Acquisition Report. The review, which is attended by the Under Secretary of the Army and the Vice Chief of Staff, highlights problem areas and assigns responsibility for follow-on action.

Multiyear contracting continues to receive great emphasis by the Army. We have long recognized the potential benefits of this procurement method and have used the multiyear approach in the past for major and nonmajor systems. The Army awarded multiyear contracts for the Black Hawk airframe and M1 fire control in FY82. In FY83, the Army awarded multiyear contracts for the MLRS, T700 engine and Bradley Fighting Vehicle components. Additionally, Congressional approval was obtained for award of the Armored Combat Earthmover in FY84. For FY85, our planned initiatives include the Black Hawk airframe, Bradley Fighting Vehicle System turret drive, the Bushmaster 25mm cannon, CH47D, 5 ton truck, and the contact maintenance shop equipment. We plan to continue to consider multiyear contracting for selected systems that have stable funding, a stable design, and stable requirements.

Recognizing that stable designs and stable requirements do not exist in all programs, the Army continues to improve its efforts in the area of program risk review. We have established a Cost-Risk Review Committee to examine systems that are approaching milestone reviews to provide a cost-risk assessment to key decision makers. Since 1982, risk reviews have been conducted on six systems. Three reviews are scheduled for 1984. Results of these risk reviews are combined with our cost estimates and expected funding level to yield an overall affordability analysis for our use in decisionmaking and program funding formulation.

We are also taking steps to improve the linkage between our cost estimating and our budget. In the past, baseline and independent cost estimates were prepared only for each milestone decision review. As a result, current cost information was not always available for budget input. We have now modified our cost estimating procedures to provide annual updates on all major programs. In addition, we are developing new procedures to integrate the use of these annual cost estimates in developing our budget. We are testing these new procedures on selected systems and expect to fully implement the process in our preparation of the FY86 POM this spring.

One of our most important Army acquisition management improvements is aimed at providing high quality, reliable equipment to our soldiers. We have a near term program dealing with systems nearing deployment or in the field, and a long range program dealing with institutional changes. Product and contract requirements for quality are being strictly enforced. Acceptance suspension and threats of suspension have resulted in significant improvements in quality. Defense Logistics Agency debarments and suspensions are up from 49 in FY81 to 150 in 1983. For the long term, actions such as our quality assurance workforce upgrade, better development-to-production transition planning and independent design/quality reviews will result in it being done right the first time. We also conduct Contractor Assessment Reviews that bring together a team of Army experts to examine all aspects of the contractor's quality program. Reviews have been conducted for the HELLFIRE Seeker and Pershing II Warhead contractors. We plan to complete ten contractor Quality Assessments by the end of FY84.

The Army is firmly committed to improving acquisition management. We believe our efforts are paying off with lower costs and more coherent and stable acquisition programs. Our limited dollar and manpower resources are being managed more intensively than at any time in our past and we will continue to move ahead on the way we do business.

With the introduction of the equipment now entering production we are on the way toward correcting current Soviet qualitative superiority in many systems. To preclude a future Soviet edge in quality and to make sure we are not surprised by a threat we would be unable to handle, we must pursue an aggressive research program.

The Army research and development program includes basic scientific research and exploratory development (referred to as our technology base) and developmental and engineering efforts directed toward improving current systems, and developing new weapons and equipment in the near future. In the FY85 budget request, approximately 15 percent of our research and development funds go to the technology base and the remaining 85 percent to developmental and engineering efforts. Recognizing the enormous technology support available in the academic community and in commercial industry, the Army has chosen to focus its technology base on those areas of highest military payoff. Selection of which research and development projects to fund is based on an assessment of enemy threat, Army developments in tactics and doctrine and an analysis of how and when the technology can be applied to Army systems. The resulting R&D programs are portrayed and prioritized in the Army Long-Range Research, Development and Acqusition Plan.

Our developmental and engineering research and development efforts are oriented toward the fielding and improvement of specific systems. Such directed efforts have resulted in the development of new systems across the entire spectrum of our mission areas--the M1 tank and Bradley Fighting Vehicles, the Apache Attack Helicopter, the Patriot and Stinger air defense missiles, the Multiple Launch Rocket System, and many others. Additional systems such as the Remotely Piloted Vehicle (RPV) and Advanced Helicopter Improvement Program (AHIP) are in the final stages of development. In addition, research and development funds support the improvement of existing systems. Such improvements range from the development of a particle separator to protect the Cobra helicopter's engine from sand and grit, to the block improvements now in testing for the M1 Abrams tank.

The importance of an adequate research and development program has seldom been greater. Today the Soviet Union supports about twice the effort that we do in military research and development and is graduating five times as many engineers. The quality of their weapons has continued to improve because of their past R&D investment, and, due to the size of their present program, we are now faced with the additional risk of technological surprise. With your support, we will prevent that from happening.

Throughout this discussion we have refrained from direct mention of the national resource which transforms the plans for equipping, modernizing, and conducting research and development into reality: the nation's industrial base.

In conjunction with national efforts to reindustrialize America, the Army has increased its emphasis on that portion of industry which most directly serves its needs. Recognizing this vital area, the FY85 budget request will build on investments being made in FY84. The requested funds will finance production improvements that should result in more timely and efficient peacetime procurements as well as improve industry's ability to deliver increased quantities of equipment in time of emergency or mobilization. The budget will also finance modernization of existing plants and arsenals, and will support the layaway and maintenance of our reserve standby plants and equipment.

The FY85 budget request will also provide resources to improve manufacturing processes and reduce production costs. The Manufacturing Technology Program seeks to improve production methods for high-cost items and technologies such as explosives-manufacturing, which has limited civilian application. This program has resulted in process improvements having an average monetary payback to the Army of three to one.

We have developed an automated production base analysis capability that provides us with an up-to-date means of comparing mobilization requirements with industrial base capabilities. The second edition of the automated analysis produced this year provides us valuable information on both capabilities and potential shortfalls.

You are invited to continue reading through the mission area chapters that follow to gain a better appreciation of how the efforts we are making now assure us of a better Army both for today and tomorrow.

CLOSE COMBAT

The Close Combat mission area relates to weapons and equipment which are used to bring direct, line-of-sight fire upon the enemy. The soldiers who fill this role are often referred to as "frontline troops" and their job is to close with and destroy the enemy. To do so, they must be well led, well trained, and provided with the equipment that will give them an edge over their adversaries. The next several paragraphs will describe those close combat equipment systems for which we are requesting funds in the FY85 budget request.

The main offensive weapon of both the US and Soviet ground armies is the tank. In a combined arms role, tanks can dominate the battlefield, spearheading the offensive, killing other tanks, devastating "soft" targets, and driving through defensive positions with massive momentum. The tank is essential to success on the modern battlefield. The Army's new tank, the M1 Abrams, is the most powerful, mobile, and survivable combat vehicle we have ever fielded, and we believe that it can outperform any other tank on the battlefield.

M1 Abrams

The agility of a tank is a major element in determining its effectiveness. A 1500-horsepower turbine engine supplies the M1 Abrams with double the power of its diesel-powered predecessor, the M60. Its stabilized sighting system ensures that speed is combined with accurate firepower. M1 tankers are able to routinely hit 5-foot targets over a mile away while moving rapidly cross-country.

This kind of on-the-move accuracy is made possible by design features of the M1's fire control and improved suspension systems. The gunner puts his sight on the target and finds the range using a laser rangefinder; a computer automatically determines the ballistic data and adjusts the lay of the main gun; the gunner need only squeeze the trigger to hit a target.

M1 Abrams

The future battlefield will be thick with antitank weapons. Therefore, the M1 tank is protected by a special type of advanced armor. This, plus its low silhouette and agility, reduces its chances of getting hit. If an M1 is penetrated, a number of revolutionary safety features will greatly enhance the survivability of the crew and the tank itself. These include an automatic fire detection/extinguishing system and armored compartments that separate the fuel tanks and main gun ammunition from the crew. The Abrams' passive thermal imaging system allows location of targets at night and through dust, haze, fog, and smoke without disclosing the tank's position.

The main armament of the Abrams tank is a 105mm rifled gun that fires chemical energy and improved kinetic energy rounds. Programs are underway to enhance the effectiveness of both the gun and 105mm ammunition to defeat the anticipated threat. In addition, beginning in 1985 the Abrams will incorporate the German-designed, US-manufactured 120mm smoothbore gun. This new version of the M1 will be called M1E1. The addition of the 120mm gun to the M1 tank fleet will insure that US tanks can keep pace with improvements in Soviet armor expected in the late 1980's and beyond. The major advantages of the 120mm gun system are greater kill capability and growth potential to meet advanced threat armors.

Design criteria make interesting reading, but the real proof comes during operations by soldiers. The first three M1 battalions fielded in Germany participated in field exercise REFORGER 1982. The M1's performance was superb. LTG Mahaffey, then Commander of the 3d Mechanized Infantry Division in Europe, commenting on the M1's superior speed, mobility and fire-on-the-move capability said, "... I am now convinced we are on the threshold of a whole new dimension of battlefield combat capability." Recently, as reported by General Otis, Commander of U. S. Army, Europe, results from REFORGER 83 verified the operational capability, reliability

Soldier's love the M1 Abrams

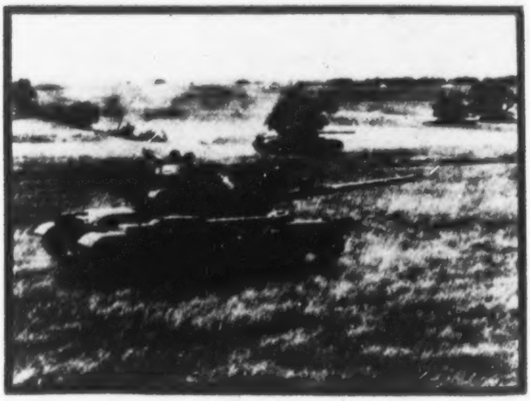
and logistics supportability of the M1 in a realistic and fast moving combat scenario. Again, the durability and reliability was demonstrated as the 53 M1's of the 1st Squadron, 11th Armored Cavalry Regiment, achieved a 98 percent mission capable rate for the entire eleven day exercise.

The soldiers' appraisal of the M1 can be summed up in one word--winner! They found the M1 Abrams easier to maintain than the M60 tank, and able to shoot more accurately while moving cross-country at high speed.

The M1 was designed to be agile on the battlefield--to accelerate quickly and move rapidly, reducing the chances of being hit. If the Abrams takes a hit, its special armor will protect the crew and enable it to continue to fight. This increased survivability has a big impact on a soldier's confidence--a factor that breeds fighting effectiveness that will win on the battlefield.

The Army has fielded four M1 battalions at Fort Hood, Texas, and five M1 battalions and two Armored Cavalry Squadrons in Germany. A North Carolina National Guard Armored Battation, a 2d Armored Division round-out battalion, received its M1 tanks last summer, underscoring our commitment to modernize the reserve components. The FY85 budget provides for 720 M1s. We have produced 1366 M1 tanks as of the end of FY83.

The M60A3 is a quality tank that will continue to see service into the 1990's because we cannot afford to replace our entire fleet of M60 series tanks with the M1. We will continue to upgrade the M60 series tanks that remain in our inventory by improving fire control systems and main gun stabilization, and building in better overall system reliability. The M60A3 model incorporates a laser rangefinder and a ballistic computer for automatic ranging and lead angle computation, and a thermal sight that gives the crew an improved capability to detect targets in darkness and on an obscured battlefield. The last programed buy of new production M60A3 tanks for US forces was funded in the FY81 budget. However, we are converting older M60A1 tanks to the modern M60A3 configuration which includes thermal sights, laser rangefinder, solid state ballistic computer, and main gun stabilization. In FY85, 460 conversion kits will be purchased.



M60A3

To insure that our 105mm gun equipped tanks can handle the threat we have begun a 105mm enhancement program. This is a most important program since the majority of our tanks will continue to be equipped with the 105mm gun. In FY85 we are requesting funds for gun fabrication, integration, and testing. The retrofit program will begin in 1987.

The history of modern warfare has vividly demonstrated that armored vehicles are critical to success on the battlefield. Operating independently, however, they are vulnerable to antitank fires from enemy infantry. Therefore, infantry must be combined with armor to assure a blend of maneuver forces that will provide the flexibility necessary to defeat any threat. In this regard, the Bradley Fighting Vehicle is an ideal partner for the M1 Abrams. This vehicle has two configurations, the Infantry Fighting Vehicle (IFV) and the Cavalry Fighting Vehicle (CFV).

The Bradley Fighting Vehicle provides vastly improved cross-country mobility, firepower, and armored protection to the mechanized infantry squad. In intense combat situations, the tank-infantry force must be supported on the move by continuous and accurate fire. The primary weapon of the IFV is a stabilized, dual-fed 25mm automatic cannon. The commander or gunner can instantly select either high-explosive or armor-piercing rounds. The high-explosive round can destroy unarmored ground targets out to 2500 meters, while the armor-piercing rounds are capable of penetrating and defeating the Soviet BMP. The two-man turret also has a two-tube TOW missile launcher and a 7.62mm coaxial machinegun. The TOW gives each squad the capability to engage enemy tanks at long range from overwatch positions.

The IFV has vision blocks, through which each member of the squad it transports can view the battlefield and direct fires of their modified M-16 individual firing port weapons. This permits continuous observation of, and contact with, the enemy while on the move. Once outside the vehicle, troops can move toward the objective supported by a high volume of firepower from the vehicle's other weapons.

BRADLEY FIGHTING VEHICLE

The Cavalry Fighting Vehicle (CFV) is identical to the IFV except for minor modifications for crew size and equipment. The CFV carries a five-man scout team and provides the cross-country mobility and mounted firepower necessary for armored cavalry and battalion scout squads to carry out reconnaissance, security, and economy-of-force operations.

Both the IFV and CFV have an inherent swimming capability and are air transportable in either the C-141 or C-5A aircraft. These fighting vehicles match the highway and cross-country mobility of the M1 tank. Furthermore, they provide soldiers significant protection against enemy small caliber weapons, artillery airbursts and antipersonnel mines. A thermal night sight insures that this potent weapon system maintains its capability during night operations. No fighting vehicle available in the world today matches the all-around capabilities provided by the Bradley.

M2-3 Bradley Fighting Vehicle

The first Bradley production vehicle was delivered to the Army in May 1981. Today, we are producing the Bradley at a rate of 50 vehicles per month. The first mechanized infantry battalion was equipped in March 1983 at Fort Hood, Texas, and the first European battalion was equipped in September 1983. The North Carolina National Guard has also received 6 cavalry versions of the Bradley Fighting Vehicle. The FY85 budget supports the production of 710 Bradley vehicles and introduces the TOW 2 subsystem capability which allows the Bradley vehicles to shoot through obscurants and counteract jamming.

The M113 family of vehicles continues to do a fine job for the Army in roles where vehicles are not normally subjected to enemy direct antitank fire. Because of affordability constraints, the FY85 carrier procurement is limited to 50 vehicles, although there is a shortage of about 4800 M113's in the force.

M113 Armored Personnel Carrier

We move now to our attack helicopters, a key element of our Army's combat capability. The attack helicopter provides our forces with a highly mobile, long range, day/night lethal antiarmor fire capability coupled with the anti-materiel, antipersonnel effect of it's cannon and 2.75-inch rockets. The attack helicopter was used first in combat in Southeast Asia where it proved to be a great asset to light infantry forces. In Europe, a ground attack on our forces will be spearheaded by masses of armored vehicles. Soviet doctrine stresses building overwhelming momentum with blitzkrieg-like tactics. Frontages mandate that we concentrate on their main avenue of approach and quickly counter their armored thrusts. Because of this mobility, attack helicopters will play a major role in any situation that requires our forces to react quickly. They can deploy to reinforce Europe or respond to other contingency requirements; they can fly rapidly across a wide front to areas that cannot be reached by ground mobile forces and they offer a significant advantage in target rich environments where exploitation is feasible. No other combat system offers the combination of high movement rates, free of the tyranny of terrain, and long-range point target destruction capability, around the clock, even during the most adverse weather conditions.

The large number of attack helicopters that the Soviets have fielded in recent years shows that their leaders have come to share our belief that they will play an initial role in winning any future land battle. The importance of attack

AH64 ATTACK HELICOPTER

helicopters, coupled with the recognition of Cobra/TOW performance limitations, led to the development and procurement of the Apache Attack Helicopter (AH-64). Armed with the laser-guided Hellfire missile, the Apache represents a significant jump in performance, firepower, and survivability when compared with its predecessor--the Cobra. More important, the Apache provides the Army a mobile, credible antitank capability that can be quickly deployed worldwide to areas of strategic concern well in advance of heavier antitank systems. Apache's ability to operate worldwide, could be the difference between success or failure.

The powerful, two-engine Apache has been designed from the start to perform anywhere in the world under the most demanding conditions of altitude and climate. Its agility enables pilots to take advantage of the terrain, vegetation, and even buildings to avoid detection. A target acquisition/designation sight and pilot night vision sensor enable the pilot to navigate and attack in darkness, bad weather and on an obscured battlefield.

Apache carries a formidable array of weaponry. The main armament is the Hellfire, a third-generation antiarmor missile. Hellfire homes on a laser spot that can be projected from a number of sources including ground observers and scout helicopters, as well as the launching aircraft itself. When targets are laser-designated by another source, the AH64 can fire its Hellfire missiles without

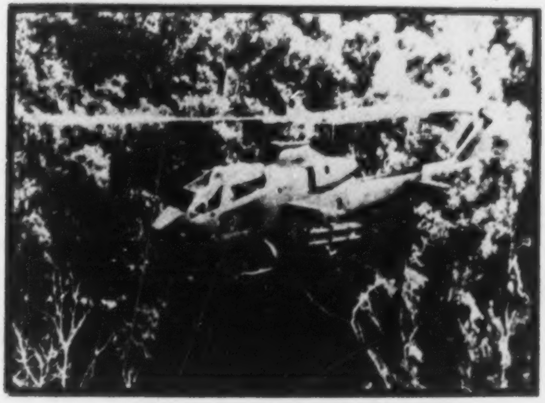
AH64 APACHE

exposing itself. Scout helicopters, equipped with sights and laser designators atop their rotor masts, will be able to spot and laser-designate targets without breaking cover. The AH64 can then ripple-fire at multiple targets while remaining completely hidden. Hellfire provides significant improvements over the TOW system in terms of greater lethality, greater standoff range, greater tactical versatility, and shorter time of flight. Apache's other armament includes the 30mm chain gun and 2.75-inch rockets, which are lethal against a wide variety of targets and complement the antiarmor Hellfire missiles.

Apache with Hellfire

The Apache's performance characteristics, coupled with survivability features such as armor protection, redundant controls, and electronic countermeasure equipment, make it one of the most survivable systems on the battlefield. The first production aircraft rolled off the assembly line ahead of schedule on 30 September 1983 and delivered to the Army in January 1984, after it completed acceptance flight testing. The FY85 budget provides for continued procurement of helicopters and a fourth buy of Hellfire missiles. The FY85 Budget supports the production of 144 Apache helicopters at the economic rate of 12 per month.

The value of attack helicopters was first shown in Vietnam, where the AH-1G Cobra had considerable success against lightly armored vehicles. In addition, the TOW was put on a Huey helicopter and knocked out a number of North Vietnamese Army tanks. After Vietnam, the TOW missile was mated with the AH-1G to produce the Cobra/TOW, or AH-1S, making it a true tank-killer.



AH-1S Cobra-TOW

Like the M60 series tank, the AH-1 Cobra helicopter has been continually upgraded to improve its operational capabilities, safety, and survivability. While these improvements will contribute to its effectiveness and survivability against armor, the Cobra is currently a daytime helicopter with limited performance capabilities when operating in a typically Middle Eastern environment.

To correct the night-fighting shortfall, we plan to modify some of our Cobras with a Forward-Looking Infrared System (FLIR) that will provide a night target engagement capability. The FY85 budget also funds other continued improvements.

Using scout helicopters to seek out and select targets enables attack helicopters to conserve fuel and ordnance, and allows the commander to concentrate his antitank capability at critical points and on established targets. Upon acquiring targets, the scouts will position the attack helicopters into secure locations, determine the distribution of fires, laser designate targets for the

HELLFIRE missile, and coordinate artillery fires, when available, throughout the battle area. During the battle, scouts provide real-time battlefield information relating to the enemy situation and targets destroyed. Additionally, the scout is a responsive system to refine intelligence from other sources and integrate all forms of firepower against the target if confirmed.

Currently, the Army does not have a scout helicopter that is capable of performing satisfactorily with the attack helicopter or the field artillery. The Army Helicopter Improvement Program (AHIP) will upgrade part of the OH-58 fleet into an improved scout helicopter. Engine performance and rotor improvements will make the OH-58 better able to operate on hot days and at high altitude, and a mast-mounted sight will incorporate a laser designator and infrared capability for night and adverse weather operations. This mast mounted sight allows the helicopter to remain masked behind the terrain with only the sight exposed. In addition to working with attack helicopters equipped with Hellfire missiles, the Scout will have the capability to acquire and designate targets for other Army or Air Force precision guided munitions such as the Army's Copperhead.

Army Helicopter Improvement Program

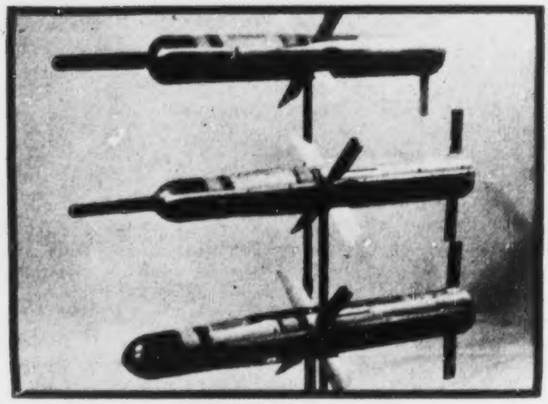
The AHIP program, based upon modification of an existing light observation aircraft, complies with congressional guidance and shows significant savings when compared with a new airframe development program. The FY85 budget supports completion of full-scale development and operational testing, initiated in FY84, of five AHIP prototypes. Procurement funding will provide advance procurement funds for FY86 and procurement funds for an FY85 conversion of 44 aircraft.

In Vietnam and Korea, the helicopter proved its worth as a combat multiplier. Hueys, COBRAs and Light Observation Helicopters (LOHs) fought alongside tank, infantry and artillery to become an integral member of the combined arms team. Those same 1960 and 1970 helicopters are getting old and can't keep pace with expanded commitments and tactical requirements. By the mid-1990s, this Army fleet will be nearly 30 years old. To replace these systems the Army will develop a Family of Light Helicopters (LHX). These aircraft will be small, lightweight rotorcraft, easily maintained and highly reliable. Their crew, weapons and sensors will be fully integrated with advanced technology for maximum lethality and they will be capable of fighting anytime, anywhere in the world, in nearly all weather conditions.

To make it small and lightweight, LHX will incorporate maximum use of composite structures, (saving approximately 25 percent of a comparable metal aircraft weight), use advanced technology engines using less fuel (20%-30%) than current engines, and incorporate fiber optic flight controls weighing 25 percent less than those utilizing current technology. In addition, LHX will have full NBC protective features and extensive crashworthiness integral to its design to enhance its survivability.

In FY85 we will continue our research into the concept of single pilot operations for LHX. We will continue LHX preliminary design studies to focus on its detailed configuration and begin development of an on-board computer to control the LHX systems and initiate full scale development on the LHX advanced technology engine.

The Hellfire missile, described earlier as the main weapon of the Apache, warrants more discussion. It is a laser-guided missile capable of employment both in direct and indirect fire modes. Hellfire is faster and has longer range and greater killing power than the TOW. Targets can be laser-designated for it by its own launch aircraft, another attack or improved scout helicopter, or by a ground laser designator in the hands of armor, infantry, or artillery elements. This flexibility will keep the enemy guessing and limit his ability to counter the missile. The Hellfire's contribution to our combat resources makes its fielding a top priority among force modernization efforts for which we are requesting funds.



TOW 2, Improved TOW,
Basic TOW (top to bottom)

The TOW missile system, which is found on the AH-1S Cobra, the Bradley Vehicles, Improved TOW Vehicles, and with dismounted infantry, is the most powerful antitank weapon used by ground units. This long-range (3750 meters) antiarmor system is a prime example of evolutionary development. First fielded in the late 1960's, the TOW has been improved to keep pace with the evolving Soviet tank threat.

The latest improvement, called TOW 2, will give the weapon an even more lethal 6-inch warhead, greater speed to reduce vulnerability, and improved guidance in an obscured battlefield environment. Deliveries of TOW 2 began in 1983. FY85 funds will be used to procure TOW II missiles and launcher modifications.

A close-in, final protective weapon is vital to the survival of defending forces when faced by an enemy in close combat. The Lightweight Assault Weapon (LAW) was designed to provide the capability required in these critical situations. It is used against mechanized, motorized, and other materiel targets. It is lightweight, proliferable, easy to handle, and can be issued to any soldier.

During the past year the Army and Marine Corps conducted an evaluation of all available weapons of this type. The results of the evaluation led the Army to cancel Viper as too expensive. The Army will retain the M72 for this mission, and will continue to test the Swedish AT-4 as a possible complement to he M72.

This type of weapon provides small dispersed elements with a lightweight shock and suppressive capability against a wide variety of targets. Throughout the depth of the battlefield, they can be employed to engage such targets as bunkers, crew-served weapons, lightly armored and reconnaissance vehicles, antiaircraft guns, and trucks as well as side or rear shots at tanks. It is well-suited for engaging fortified positions or for use in built-up areas, and is ideal for use in combat patrols such as those conducted by our infantry and ranger units.

As the rifle squad is the ultimate focus of close combat, it must have the capability to provide effective automatic weapon fire. The squad's organic small arms systems now include the M16A1 rifle and the M203 grenade launcher. Two soldiers are designated as automatic riflemen and are provided M16A1 bipods to support the weapon and to improve the accuracy of automatic fire. Even with the bipods, the maximum effective range of the automatic fire is less than 500 meters. In order to improve both the accuracy and range of the rifle squad's automatic fire, we are buying a new squad automatic weapon (SAW).

The SAW is a lightweight, manportable machinegun capable of delivering a heavy volume of effective fire up to a range of 800 meters. It will provide increased range and volume of fire, and better penetration than the automatic M16A1 rifle. The fielding of this weapon will provide a significant increase in the squad's overall firepower capability. The FY85 budget request for $12.9 million will purchase 3800 weapons.

SQUAD AUTOMATIC WEAPON

Nightfall will no longer bring down a curtain on battle activities. Because of advanced night vision devices, night will simply mean a slightly altered environment to soldiers in a future war.

The Army's current night vision devices are termed passive in that the enemy is unable to determine when they are being used. Night vision goggles, such as the AN/AVS-6 and AN/PVS-7, use image intensification tubes, which increase the ambient moonlight and starlight. The view through the goggles is almost like seeing in daylight. These devices allow the individual soldier to perform his mission 24 hours a day. Individual weapon sights for the M-16 rifle (AN/PVS-4) and M-60 machine gun (AN/TVS-5) also use image intensification technology. We are trying to reduce the cost on these systems, so they will be available to more soldiers.

Another family of night vision devices uses thermal imaging. By sensing the temperature differences between objects and their surroundings, these devices can differentiate or "see" tanks, trees, people, and anything else that has a temperature signature. These devices, now used on antiarmor missile systems, helicopters, and combat vehicles, are sensitive enough to see through haze or fog; more important, they can see through the smoke that the Soviet units rely on to mask their armor movements. This is a technology area in which we clearly lead the Soviets.

Surveillance, target acquisition, and night observation--STANO--systems lend new force to the military adage that "what can be seen can be hit." By reducing the enemy's capability to mass his forces and achieve surprise under the cover of darkness, these systems rob him of two of his most effective tactics. Likewise, these STANO systems play a critical role in mounting a counterattack against superior manpower and hardware. Therefore we must continue technology efforts which increase the combat effectiveness of our forces during periods of darkness.

This concludes our overview of the close combat mission area and we will now move to the fire support mission area to discuss how the frontline soldiers are supported.

FIRE SUPPORT

The Fire Support mission area includes those systems that are used to generate indirect firepower. The systems in this mission area include not only conventional, nuclear, and chemical firepower provided by cannons, rockets, and missile systems, but also the target acquisition and fire control elements integral to field artillery systems. This section will address the Army's longest range systems first and then will discuss direct support artillery weapons, fire control, and target acquisition systems and finally ammunition developments.

Soviet doctrine emphasizes the use of mass and echelonment in depth. Warsaw Pact forces believe that they can afford to attack with successive waves of forces, accepting massive losses of men and materiel as an acceptable price to pay for victory. We must, therefore, be able to strike early and strike deep with great accuracy and massive firepower. We must also be capable of attacking enemy units up to the forward edge of our troop positions with concentrated, accurate, and readily available firepower.

The Soviets' early use of their own artillery will make this task even more difficult. Their doctrine stresses the use of concentrated artillery fire in coordination with blitzkrieg manuever of troops. The Soviets greatly outnumber us in artillery and have the potential to pound our positions with massive amounts of indirect fires. To preclude this, our own field artillery must be able to neutralize their indirect fire systems through effective counterfire.

The Army's most powerful weapon is the Pershing II, which has more than twice the range of the existing Pershing Ia and far better accuracy. It employs radar area correlation to achieve its pinpoint accuracy. Radar "pictures" of the target area, in cassette form, are inserted into the missile prior to launch. As the reentry vehicle approaches the general target area, it takes its own radar "pictures" of the terrain, comparing them to the original. By making course corrections until the two pictures coincide, the missile can achieve surgical accuracy. This permits the use of a relatively small nuclear warhead that reduces collateral damage to the minimum. Pershing II is in production and began deployment in December 1983. FY85 funds will support the fourth production buy.

Pershing II

The Lance missile system, which was fielded in the mid-1970's, is our current system used to attack second-echelon enemy formations and for delivery of short-to medium-range nuclear fires. Lance can deliver a 1000 pound conventional warhead to a target located over 70 kilometers away. Enemy logistics facilities, air defense sites, and communications centers are prime targets for this warhead.

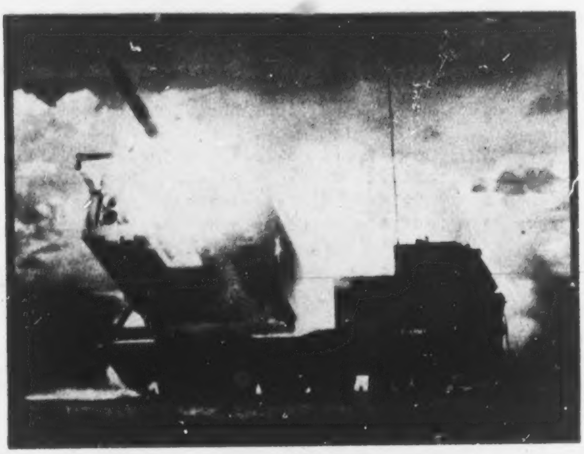
To improve the conventional capability provided by Lance and to eliminate many of it's shortcomings (e.g., slow rate of fire, manpower intensity, limited range, etc.), a follow-on joint program with the Air Force, called the Joint Tactical Missile System (JTACMS), is being pursued for the late 1980's/early 1990's.

JTACMS will be used by the corps to destroy, delay, or neutralize enemy forces far beyond the range of cannons and rockets. The corps, by slowing down the enemy's ability to reinforce and support the central battle, can overcome the expected unfavorable force ratio. The JTACMS program was created when the Army's Corps Support Weapon System (CSWS) and the Air Force's Conventional Standoff Weapon (CSW) were merged by the the Office of the Secretary of Defense on 30 June 1982. FY85 funds provide for to lead us to the earliest possible IOC.

The Army-led, Joint Antitactical Missile (ATM) program began in FY 83 to develop counters for the growing tactical surface-to-surface missile threat. The program consists of concurrent, near-, and long-term approaches. Near term efforts upgrade existing air defense systems to field an early capability. Long-term efforts focus on development of a new or evolutionary ATM system. The full solution will include both active and passive countermeasures, and may require a combination of systems, some of which already exist. FY85 funds will provide for continued early research and development work.

While we must be prepared for both nuclear and nonnuclear contingencies, our first response capability must be adequate conventional firepower. As enemy units advance, there may be critical periods when large numbers of targets threaten to overwhelm the capacity of tube artillery. When this happens, we must be able to strike deep with great accuracy and massive firepower, as well as be capable of attacking enemy units up to the forward edge of our troop positions with concentrated, responsive fire.

The Multiple Launch Rocket System (MLRS) is the system that fills this need. It will provide the Army with its first multiple rocket artillery capability since World War II. The MLRS rocket warheads contain a large number of improved conventional submunitions which are dispensed from the rocket high over the target and blanket the area with explosives and fragments. These submunitions are devastating against targets such as air defense sites, artillery positions, and troops in the open. The submunitions are



Multiple Launch Rocket System

also effective against the thin top armor of tanks and other fighting vehicles. The MLRS will be used against concentrations of enemy vehicles, enemy artillery, and as an air defense suppression means.

The MLRS provides massive firepower. More than three 8-inch artillery battalions, firing simultaneously, would be required to deliver an equivalent number of submunitions as one launcher-load of 12 MLRS rockets. The system also has incorporated a number of built-in efficiencies. The rockets are sealed in pods for shipment and require no maintenance after leaving the factory. The MLRS tracked carrier vehicle is a derivative of the Bradley Fighting Vehicle and has the same power train and level of armor protection for the crew's protection. Although normally operated by a three-man crew, in an emergency one soldier can operate the entire system. Devices on the launcher can determine both location and direction, and an on-board computer unit computes fire commands, sets fuzes, and automatically fires the rockets. The vehicle cab is designed so that crew-members can remain in the cab during rocket firing. It also has a positive overpressure system. The FY85 budget will fund continued residual R&D efforts resulting from the Operational Test (OT) III, and multiyear procurement of this important new system.

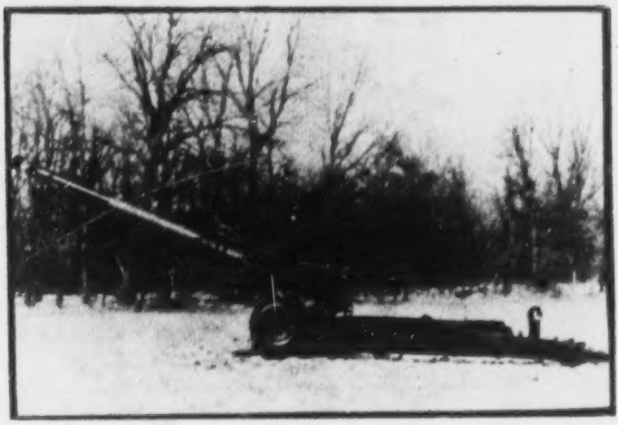
The MLRS is being developed by the US in cooperation with Germany, France, the United Kingdom, and Italy. In conjunction with Germany, France, and the United Kingdom, we are pursuing the development of a Terminal Guidance Warhead (TGW). This warhead will enable the MLRS to attack hard point targets 30 kilometers from the launcher. The concept calls for a rocket to fly to the kill zone, where the warhead will dispense multiple submunitions that seek out and destroy enemy targets. The FY85 budget will provide the initial funding for TGW validation phase development.

The M198, 155mm Towed Howitzer, which is now being fielded in light divisions and separate maneuver brigades, is our newest howitzer. It is capable of firing 30 kilometers using a rocket-assisted projectile. The M198 provides major increases in range and reliability over its predecessor howitzers and may be delivered by parachute or carried by a variety of cargo aircraft and the CH-47 helicopter. The M198 can fire scatterable mines, nuclear rounds, Improved Conventional Munitions (ICM's), conventional high explosives, and Copperhead. Although our budget does not contain M198 procurement funds for this fiscal year, our long-range plan forecasts additional procurements beginning in FY87 and continuing through FY89.

The mechanized and armored portions of our force structure have the M109 self-propelled 155mm howitzer and the

M198 Howitzer

M110 8-inch self-propelled howitzer. These weapons date back to the 1960's, but have been improved over the intervening years. We have extended the range of the 155mm howitzer to 24 kilometers and the range of the 8-inch howitzer to 30 kilometers using rocket-assisted projectiles. We are continuing to modify the M109 in order to extend the



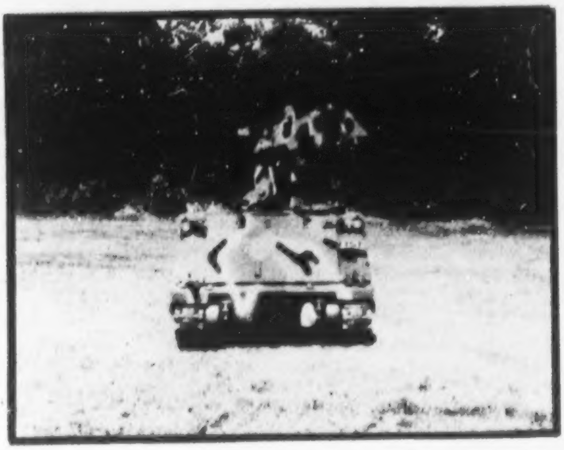
M109 Howitzer Improvement Program

life of the system to at least the year 2000. In this year's budget request we have asked for $34.3 million to procure modification kits that will provide increases in survivability, automotive reliability and maintainability. We have also requested $5 million to conduct research and development of improvements that will provide additional increases in armament reliability and survivability against NBC attack and counterfire, as well as increase responsiveness and reduce crew fatigue. The howitzer improvements are only part of the overall effort leading to modernization of the Artillery System. We are also improving target acquisition, fire control, and munitions.

The Ground Laser Locator Designator (GLLD) is used by artillery forward observers. This dual-purpose device is used by a forward observer to determine target range precisely and to illuminate targets for laser-guided projectiles, missiles, or bombs. The GLLD achieved its initial operational capability in 1982. The FY85 budget provides for continued procurement.

GLLD

In our armored and mechanized units the Fire Support Team (FIST) requires a mounted vehicular capability. The new Fire Support Team Vehicle (FISTV) will give the FIST armor protection, mobility, and built-in communications which will enable it to operate with fast-moving armor, mechanized infantry, and cavalry units, and be responsive to the maneuver commander.



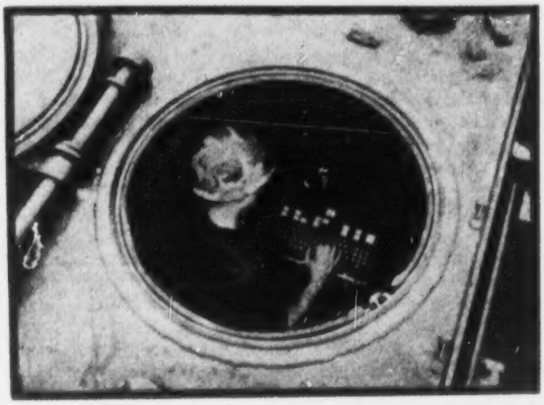
FISTV

The FISTV represents a combination of new laser technology with the proven performance of the M113A2. The vehicle is very similar in appearance to the Improved TOW Vehicle and incorporates the GLLD in an armored, elevated module mounted on an M113A2 chassis. The FISTV is equipped with a north-seeking gyro that provides the directional data needed for accurate artillery fire requests. It can operate in hull defilade with only the elevated GLLD module exposed, thereby increasing survivability. FY85 funding provides for continued procurement of FISTV Modification Kits.

An awesome challenge to our artillerymen on today's battlefield is the effective management of the enhanced firepower capability we have been describing. Our tactical fire direction system (TACFIRE) provides an automated data processing system that makes rapid reaction and efficient engagement possible. Testing has shown TACFIRE to be approximately twice as fast as the old manual system and more than ten times as effective when considering selection of munitions, volume of fire, and accuracy.

TACFIRE procurement has now been completed for the active forces. Fielding continued last year, with the 1st Armored, 24th Infantry and 2nd Infantry Divisions. In order to keep our command and control effective and efficient on future battlefields, we have begun development of the Advanced Field Artillery Tactical Data System (AFATDS). This system will use proven concepts from TACFIRE and take advantage of new technology to develop an evolutionary follow-on system. FY85 funds will be used to continue development of the Communication Control Subsystem, the first phase of the AFATDS system, and to continue development of Phase 2 composed of Fire Support Terminals and Fire Support System.

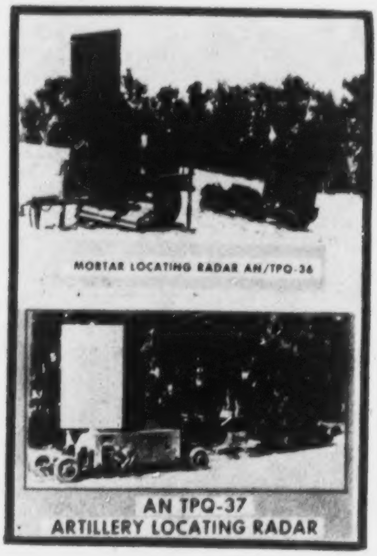
Overall artillery mission effectiveness will be significantly increased by improving operations at battery level as well. The Battery Computer System (BCS) is a vehicular-mounted, gunnery-related computer system. It will replace the TACFIRE battery display unit and the obsolete Field Artillery Digital Automatic Computer (FADAC) in artillery batteries. The BCS provides firing data to each individual weapon through an automatic digital link from the battery computer unit to the gun display units. The BCS performs ballistic computations for individual weapons and will interface with TACFIRE. It increases mission effectiveness by reducing response time, improves weapon effectiveness by providing individual weapon firing data, and increases battlefield survivability by enabling better



Battery Computer System

use of terrain. The Army is acquiring the BCS for both active and reserve forces. FY82 funds completed the buy required to outfit the active force. FY85 funds will continue procurement of BCS for Army National Guard and Reserve units.

Target acquisition within the fire support mission area is of equal importance to fire delivery and control systems. The Firefinder system, consisting of AN/TPQ-36 mortar-locating radar and AN/TPQ-37 artillery-locating radar, will give our soldiers the ability to automatically detect and locate enemy batteries in realtime and to attack them with timely and accurate counterbattery fire. The final procurement request for Firefinder was FY83 with the last unit scheduled for delivery to the Army from that buy in late 1985.



Firefinder

The effective use of field artillery weapons depends upon accurate location, direction, and estimates of the influence of the atmosphere on artillery projectiles, rockets, and missiles as they travel to their targets. We now have automated systems to provide these data.

The Position and Azimuth Determination System (PADS) is an automated, self-contained inertial surveying system which will provide the field artillery with a secure, all-weather, day/night means for rapid survey control. Surveys that normally take the conventional eight-man surveying party several days can now be accomplished by a two-man PADS party in a matter of a few hours. The FY85 request will purchase 101 systems.

The new Meteorological Data System (MDS) will insure that artillery fires are adjusted considering changing atmospheric conditions. This is significant since greater ranges of artillery projectiles will cause them to be exposed to atmospheric effects for increased periods of time. Reliable data are also required on how weather will affect electronic warfare and battlefield obscurants employed by the enemy. In a "dirty battlefield" environment, where anything from a severe storm to chemical or nuclear conditions can prevail, we must have timely meteorological data. The MDS will accurately measure the atmospheric variations and automatically transmit those variations to TACFIRE and other automated systems that compute artillery firing commands. FY85 funds will be used to continue the third year of production.

Our ammunition request provides for increased readiness by buying more rounds for tanks and artillery, for essential modernization by procuring a number of smart rounds such as Copperhead, and for improved sustainability through modernizing old production facilities and increasing explosives and propellants. Each component of the ammunition budget responds to a deficiency in readiness, modernization, or sustainability. The stabilization of the ammunition account is key to providing the warfighting capability we need.

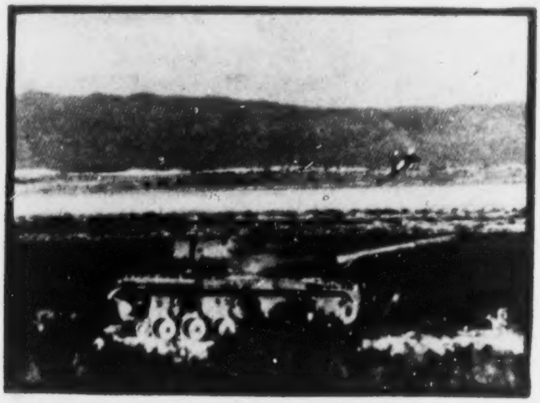
Within the Army budget, field artillery ammunition has been allotted the largest portion of our resources for munitions procurement. Major items in this category are 8-inch and 155mm Improved Conventional Munitions, the Multiple Launch Rocket System (MLRS), 155mm Area Denial Munitions and Remote Antiarmor mine system projectiles. Other significant categories include tank gun, small arms, mortar ammunition, and ground and helicopter-dispersed scatterable mines.

Opportunities exist for making our weapons more effective through the use of modern munitions and advanced guidance systems. By making greater use of these technologies we can achieve a significant increase in our conventional capability in a cost-effective and timely fashion.

The munitions research and development programs cover all types of conventional munitions from exploratory development through engineering development. Major areas include: technical base programs for large caliber munitions development and ballistics technology work applicable to all systems; development of modernized ammunition for the 105mm tank fleet; continued development of improved 120mm ammunition for the Abrams tank, field artillery munitions such as the Sense and Destroy Armor projectile--a top attack, antiarmor projectile employing improved sensing submunitions for both 8 inch and 155mm howitzer ammunition, numerous smaller projects for development of fuzes and propellants; and research and development of mine and countermine systems. The FY85 request will allow the Army to continue this critical research and development area.

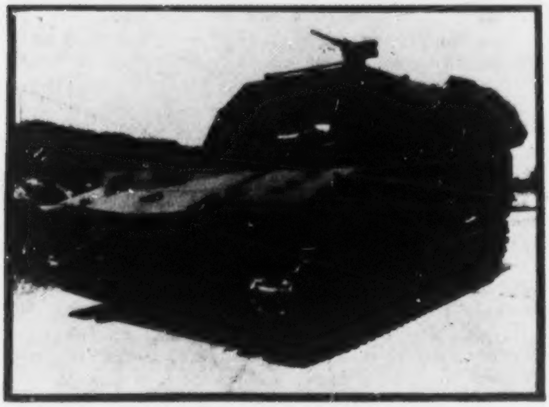
A successful product of munitions research and development is the precision guided projectile known as Copperhead. Until the advent of Copperhead, the field artilleryman faced the statistical probability of wearing out his gun tube before hitting a moving tank. This laser-guided 155mm howitzer projectile will change these odds dramatically.

Copperhead is fired from existing 155mm howitzers. It uses a built-in, semiactive laser seeker which makes it possible for the round to destroy stationary or moving armored targets, at ranges of up to 16 Kilometers, with a high single shot kill probability. As the projectile descends toward the intended target, its laser seeker searches for and acquires the reflections of a laser beam. This beam can be projected onto the target by GLLD, FISTV, AHIP or Apache or by a remotely piloted vehicle. The projectile corrects its course through the use of its fins as it "homes" to the laser spot on the target.



Copperhead

Copperhead has been in production since 1981 with over 4300 rounds produced through FY83. Since July 1982, Copperhead has demonstrated better than 80% reliability. FY85 funding will be used to purchase 2262 additional rounds.



FAASV

As a part of our modernization effort, we are also looking at improvements in ammunition hauling, handling, and survivability. In FY83 we initiated procurement of the Field Artillery Ammunition Support Vehicle (FAASV), which is equal in mobility to the self-propelled howitzers in our inventory and provides armored protection for both crew and ammunition. FAASV is being procured for deployment in Europe only. The FY85 request will add 170 FAASVs to the Army inventory.

AIR DEFENSE

The Army's Air Defense mission area includes those activities involved with the detection and engagement of the enemy air threat with ground gun and missile systems, in coordination with Air Force interceptor aircraft.

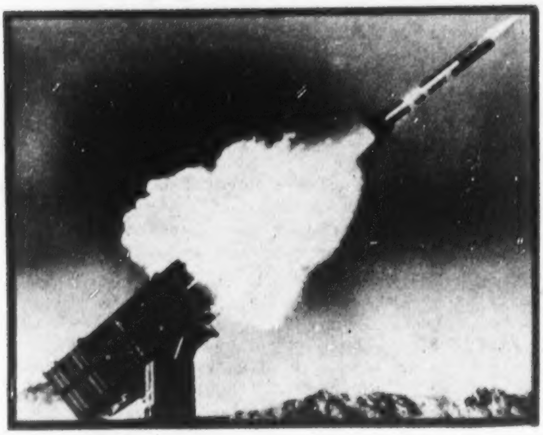
Without adequate Air Defense coverage, ground combat elements, supply lines, command centers, Air Force strike bases and other high-value targets are exposed to destruction by fixed-wing attack aircraft and attack helicopters. Pact forces have over 3,000 combat aircraft in Central Europe, including bombers, fighters, and helicopters. Quality and quantity are on the rise. Ground attack aircraft such as Flogger, Fencer, the Ground Support Fighter, and the HIND attack helicopter pose a deadly threat to armor and mechanized forces. In addition to the aircraft threat, there is an increasing threat from the growing numbers and types of ballistic missiles and air-launched missiles. Without adequate air defense protection, ground combat forces and support elements will be seriously jeopardized.

For many years, our air defense needs have been served by Redeye, Vulcan, and Chaparral--the Short-Range air defense systems, and the high- to medium-altitude Air Defense capability, which includes I-Hawk and Nike-Hercules. The Army's air defense modernization plan will permit a mix of systems to be fielded that will be effective against the postulated air threat into the 1990's. In this section, we will first discuss our largest air defense system, Patriot, and work our way to the manportable Stinger air defense weapon.

In the future, we can expect to experience saturation raids by large numbers of sophisticated aircraft employing electronic countermeasures. Intense electronic jamming and limited firepower capabilities threaten the usefulness of our current systems, Nike-Hercules and Hawk. Therefore, we are fielding Patriot to replace Nike Hercules and improving Hawk to counter the threat.

One of the main shortcomings of Hercules, which has been in the force since 1958, is that one battery can engage only one aircraft at a time. The operator has to wait until the first missile goes all the way out to the target and detonates before firing another. Patriot can simultaneously attack and destroy several enemy aircraft while tracking scores more.

Patriot employs a new guidance concept called Track-Via-Missile. As the missile reaches the area of an enemy aircraft, it informs the radar where it is in relation to the target. A computer then makes calculations and directs the missile on a path that insures a kill.



PATRIOT

Due to its advanced technology, Patriot is operated with fewer soldiers than its predecessors. Each Patriot launching station contains four ready-to-fire missiles. The missiles, which are sealed in a canister that serves as both shipping container and launcher tube, require no field maintenance. The Patriot system employs up to eight truck-mounted launchers that can be widely dispersed. Communication with the Engagement Control Station is made via secure data link.

Enemy targets can be tracked and prioritized for destruction through the interaction of Patriot's radar and computer. The radar can guide several missiles at the same time, updating priorities as threat aircraft are simultaneously engaged. Operating modes vary from manual mode to fully automatic mode. The system's two operators always retain full override capability over computer decisions.

The Patriot system is currently in production and is being considered for adoption by our NATO allies and the government of Japan. The FY85 budget will support the procurement of additional fire units and support the fielding of the system, which will continue through 1990. It is the world's finest air defense system and can defeat any aircraft in existence today or anticipated for development.

The mainstay of the Army's low-to medium-altitude air defense is the Improved Hawk missile system (I-Hawk). Although Patriot will replace some I-Hawk units, an I-Hawk force will be retained indefinitely. Ongoing and planned product improvements will upgrade I-Hawk system performance to meet the projected threat of the 80's. The upgraded version will have a simultaneous engagement capability against close-in saturation attackers, increased detection range, improved reliability, and greater effectiveness against jamming. Twenty foreign countries have bought the system, and procurement interest has been expressed by several others. Part of this worldwide acceptance can be attributed to Hawk's showing in the 1973 Mideast war, where, in its basic configuration, it downed more than 20 MIG's and other aircraft. The FY85 budget will fund continued product improvements and procurement of replacement rocket motors.

I-HAWK

Chaparral, the Army's short-range air defense missile system, was first fielded in 1969. It will remain in the active inventory through the 1990's, and beginning in 1984 will be provided to the National Guard. To keep Chaparral current against the threat, an ongoing product improvement will improve system operability and maintainability.

Improvements to date include an improved infrared guidance which provides a forward engagement capability, an Identification Friend or Foe (IFF) device to assist the gunner in identifying friendly aircraft, and a smokeless rocket motor to reduce the visible smoke trails when missiles are launched.

Current improvements include adding Forward Looking Infrared Radar (FLIR) for improved target acquisition, upgrading the missile with the rosette scan seeker (RSS) to

Chaparral

provide improved Infrared Radar Counter-Countermeasures (IRCCM) and adding other modifications to improve system performance reliability and NBC protection.

Chaparral is effective against all types of aircraft at low altitude. It provides protection for divisional and rear area critical assets to include air bases. Chaparral, with programmed improvements, is the most cost-effective short-range air defense missile system option available to the Army.

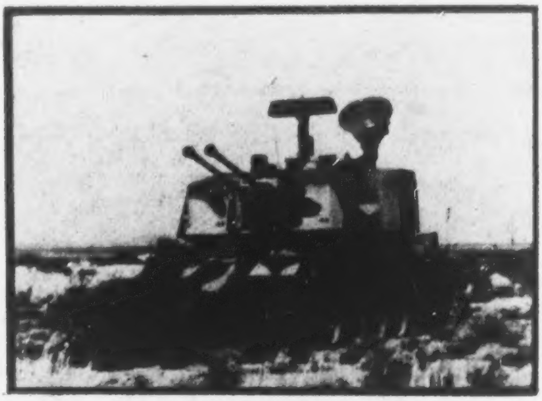
FY85 funds provide for prototype testing of the missile RSS improvements, FLIR research and development, continued production of the FLIR and fielding of a towed version to support the 9th Infantry Division. Rear compartment cooling, the master indicator panel, the weapon display unit and NBC protection will be included in production.

The Short-Range Air Defense Command and Control (SHORAD C^2) system is being developed to allow maximum effectiveness of short-range air defense weapons. This C^2 effort focuses on increasing the probability of successful engagement of hostile targets, improving our capability for aircraft identification, and insuring timely dissemination of C^2 information.

The present SHORAD method of accomplishing command and control is totally manual. Information from the sensors of the high- to medium-altitude air defense community is provided through voice communications. This information is received at a central control facility at the SHORAD battalion where it is manually plotted and retransmitted by voice to the appropriate air defense and combat elements. This method is time-consuming and limits the probability of successful air defense operations.

The SHORAD C^2 development will automate this process and enable us to successfully engage the air threat we anticipate within the division airspace. Computer processors, graphic displays, terminals and data links will replace most human actions and voice communications in order to provide the fire units with the required data quickly and simply. FY85 funds continue full-scale engineering development.

We have developed the SGT YORK Air Defense Gun System to provide air defense protection for the forward deployed forces in our armored and mechanized units. This system was developed under a unique accelerated acquisition strategy which featured a Government "hands-off," competitive demonstration/validation phase, culminating in a head-to-head demonstration by the two competing contractors. This acquisition strategy cut several years off the development cycle and saved costs.



SGT YORK

The SGT YORK is a twin 40mm gun system with digital fire control, and acquisition and track radars mounted in an armored turret. The turret is mounted on a modified M48A5 tank chassis. This gun system is capable of engaging high speed, fixed-wing aircraft and helicopters that pose a threat to our forward maneuver forces. This fast reacting, highly accurate system fires high explosive, point-detonating or proximity-fuzed ammunition. In addition to its air defense role, the SGT YORK can be used in a ground defense role to destroy lightly armored combat vehicles. FY85 funding will procure 132 SGT York gun systems and the ammunition to support them.

As the SGT York air defense system enters our armored and mechanized divisions, the self-propelled Vulcan 20mm air defense systems currently in those divisions will be transfered to National Guard units. In 1982 a program was initiated to upgrade self-propelled Vulcan systems for the National Guard. The product improvement was designed to enhance the Vulcan capability by providing increased effectiveness, improved reliability and better maintainability. The Product Improvement Program Vulcan Air Defense (PIVAD) system was expanded to include modification of towed systems for the active component airborne, air assault, and light infantry divisions. The Army's current plan is to modify all 600 systems currently in the inventory, which includes both self-propelled and towed versions. In FY84 we were provided the first year of procurement funds to modify 288 systems. In FY85 we are requesting funds for 241 modification kits to complete the fleet of Vulcans, both self propelled and towed.

Product Improved VULCAN

Stinger is the Army's manportable air defense missile system. It provides air defense protection for forward deployed ground combat units. Stinger was developed to replace the aging Redeye system, which was first fielded in the mid-1960's, and which has limitations when matched against the current and projected enemy air threat.

Stinger overcomes many of Redeye's shortcomings with improved range and maneuverability, the ability to attack much faster targets, and, most important, the ability to attack aircraft from any angle. The missile uses a passive infrared seeker that homes on the exhaust plume of a target. A proportional navigation system enables the Stinger to fly an intercept course to the target. The high-explosive warhead is designed to penetrate the aircraft before exploding so as to insure a kill. These capabilities provide an enormous advantage over the Redeye system, which is a "revenge" or tail-chase system only.

STINGER

Stinger was designed with growth potential in mind and an improved Stinger seeker, Stinger-POST, completed development and began production in FY83. This seeker will improve Stinger performance in a countermeasures environment. The Stinger missile was initially deployed to active Army units in Europe in February 1981. FY84 funding completed the procurement of Basic Stinger and continued production of STINGER-POST. FY85 funding continues production of 2360 Stinger-POST.

The importance of getting our new air defense systems to the field cannot be overemphasized. They will provide needed improvements in capability as well as making more efficient use of our air defense manpower.

COMBAT SUPPORT

The Combat Support mission area includes those systems designed to provide operational support to the soldiers in the combat area. Included in this mission area are engineer support to include mine and countermine operations, support of combat operations in a nuclear and chemical environment, the conduct of electronic warfare operations, and the provision of tactical intelligence to support combat operations.

We are well acquainted with the Soviet use of massed armor and the formidable threat it poses to our forces. Minefields, obstacles, and protective barriers are several means of making the enemy's job difficult. Mines can destroy the tanks spearheading an attack and cause disruption and delay in the enemy's advance, or deny him access to planned avenues of approach. If the enemy commander decides to halt and clear a path through the minefield, he must compress his formation and expose himself to our concentrated antitank and artillery fires. If he attempts to run through the minefield, he will pay a heavy price in tanks. Finally, avoiding the minefield costs him time and may well force him to maneuver his force into our preselected kill zone or into disadvantageous terrain.

On a fluid, rapidly changing battlefield, it is imperative that minefields be emplaced expeditiously. In the past, the emplacement of mines was a slow and laborious process, and mines had to be emplaced long before the enemy commander had declared his intentions. The new family of scatterable mines changes this situation. The Ground-Emplaced Mine Scattering System (GEMSS) will enable us to lay large minefields in a comparatively short timespan. GEMSS, a trailer-mounted system with a capacity of 800 mines, dispenses at a preselected rate to provide the minefield density required. This capability can be best appreciated by comparing the system with the older mines and dispensers in our inventory. Using the older systems, it would take 50 hours to lay a 2500-meter antitank minefield and require 46 5-ton truckloads of mines. GEMSS can lay a more effective minefield in 3 hours and requires only three 5-ton truckloads of mines to do it. The GEMSS mines weigh 4 pounds each and are as capable of destroying a tank as the old 30-pound blast mines that are still in the inventory. GEMSS is now in production, and the FY85 budget request will provide for procurement of 20,000 antipersonnel and 84,000 antitank mines.

As integral members of the combined arms team, engineers have responsibility for providing specialized support to insure the mobility, countermobility and survivability of the maneuver elements. In the lethal environment of the main battle area, the combat support role of the engineers greatly increases the combat effectiveness of our fighting forces by providing terrain reinforcement, construction of

Armored Combat Earthmover

fighting positions and obstacles, breaching barriers, clearing obstacles and preparing bridge crossing sites. Today this mission is even more critical as the battlefield becomes increasingly mobile.

The M9 Armored Combat Earthmover is uniquely capable of accomplishing all of these mobility, countermobility and survivability tasks in the forward area of the battlefield. The M9 has the speed and all-terrain mobility to move with the combat force and provide critical support when and where needed. The M9 offers armor protection against artillery fragmentation and light direct fire weapons and operator protection against chemical and biological agents. The M9 is air transportable and air droppable. It can swim, dig, bulldoze, haul and move with the flow of the battle. The M9 is an essential element of a success-oriented combined arms team.

The FY85 program for 119 vehicles continues a 5-year multiyear contract to be awarded in FY84 that will provide a total of 1,318 vehicles to equip combat engineer units in the heavy force plus select light forces.

Chemical warfare may very well be the Army's most vulnerable area in the 1980's. Even though the US is formally committed to the policy of "no first use" of lethal or incapacitating chemical agents by adherence to the Geneva Protocol of 1925, and seeks a complete and verifiable ban of lethal chemical weapons, the threat still exists. Today, US forces are facing a chemical threat from an adversary that is the best prepared and trained nation in the world in the use of chemical warfare. Without question, the Soviet Union possesses a formidable offensive capability to wage chemical warfare for an extended period, and their leadership continues to devote significant resources to research, development, and procurement of more advanced chemical weapons and equipment. They also have a large and well-equipped, dedicated chemical force, and all units within their armies train extensively for chemical warfare, including the use of live agents in training.

Given the disparity between US and Soviet chemical warfare capabilities and evidence of Soviet use of chemical warfare directly or through surrogates, we must promptly modernize our own retaliatory capability. The US currently has a limited stockpile of chemical munitions. All of these munitions are of the unitary design; that is, they contain the actual agent in its final form. These munitions are also aging--some date back to World War II--are costly to store, maintain in a usable status, and transport in a safe manner. Additionally, the stockpile is composed of weapons and agents that are inadequate. The best option for developing and insuring a credible retaliatory stockpile in support of the national policy of deterrence is binary modernization. The binary concept uses two nonlethal chemical components that combine during the flight to the target to form a lethal chemical nerve agent. In addition to the added safety and flexibility afforded by binary munitions during production, storage, and movement, binary modernization will allow us to update weapon and agent mix. Accordingly, an intensive R&D effort is underway to improve binary technology for application to rocket and missile warheads.

The Congress, recognizing the need to modernize the chemical weapons stockpile, appropriated $23.15 million in FY81 for construction and facilitization of the Integrated Binary Production Facility at Pine Bluff Arsenal, Arkansas, for production of the 155mm GB-2 (nonpersistent) artillery round. Initial construction began in October 1981, and completion is expected in August 1984. The Army FY85 program includes funds for procurement of 155mm projectiles and equipment. Research continues on improved agents with an objective of developing a binary chemical warhead for the Multiple Launch Rocket System.

In addition to modernizing the chemical weapons stockpile, we must continue the procurement of chemical protective equipment in FY85 to improve the ability of our forces to survive an initial chemical attack. More procurement, research, and development are required before we can sustain combat operations in a chemically contaminated environment. Additional quantities of the fielded protective masks will be procured to provide adequate individual respiratory protection for each soldier. Also, collective protection systems are being integrated into our command, control, and communications systems and combat vehicles.

The FY85 chemical program expands our efforts with academe and industry to broaden the technology base required to support materiel needs. Development will continue on a new protective mask, and numerous items of collective protection equipment for shelters, vans, and tactical armored vehicles. In the chemical agent detection and alarms area, development will continue on a remote sensing alarm, an automatic chemical agent detector alarm, and an automatic liquid agent alarm. Work will also continue on decontamination systems for clothing and a rapid decontamination system for tactical vehicles.

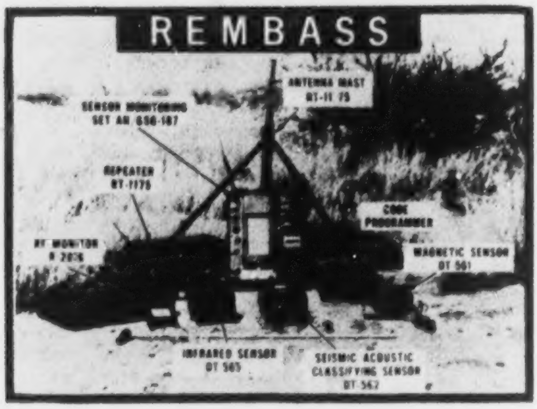
Nuclear artillery projectiles have provided part of the US nuclear deterrent for the past 30 years. Currently fielded nuclear artillery projectiles, which incorporate 1950's era technology must be replaced to assure continued reliability and effectiveness. Modernization programs are underway. We are completing procurement of the 8-inch nuclear artillery projectile now. In compliance with congressional direction, we are terminating the improved 155mm nuclear projectile program in FY84. However, with congressional approval, we intend to conclude this program in an orderly manner in FY85 by completing a limited technical data package to qualify major components. However, we urgently request funding beyond FY85 to continue this important program to production and deployment. These nuclear artillery projectile programs, if fully funded, will provide us with a Short-Range Nuclear Force (SNF) that will continue to provide a credible nuclear deterrent by assuring the collective survivability of NATO SNF and enhancing the survivability of our conventional firepower.

Historically, a ground commander's greatest shortcoming has been the lack of information concerning the enemy's location, disposition, and intentions. With the introduction of the Remotely Piloted Vehicle (RPV), a relatively small, propeller-driven, remotely controlled aircraft, the commander has an enhanced capability to gather intelligence behind enemy lines. The Remotely Piloted Vehicle has the capability to fulfill several important battlefield functions. It is designed to fly into hostile territory and locate targets, adjust artillery fire, and laser-designate targets for destruction by laser-homing artillery or missiles. It can also perform reconnaissance, damage assessment, and other functions. The RPV carries a small television camera and a laser designator. In its later version, a Forward Looking Infrared (FLIR) night vision sensor will be added.

RPV

The RPV can fly above a key enemy zone in order to gain required data when the defensive strength of the enemy is likely to make manned reconnaissance extremely risky. Small RPV's, which are difficult to track and hit, will enable us to fly reconnaissance missions without risking pilots or valuable aircraft. RPV flight testing started in July 1982, and seventeen successful flights have been flown. Launch, recovery, navigation, and telemetry of TV video were demonstrated. FY85 funds will support continuation of flight tests, development tests, operational tests and continuation of development of the FLIR night vision sensor.

Interdiction is a key to battlefield success. The enemy's momentum can be diminished by attacking high-value second-echelon targets, thereby reducing his ability to mass and build up momentum. To accomplish the interdiction mission, a combination of mutually dependent sensor and computer-based tactical systems provides the tactical commander the ability to detect targets and rapidly disseminate surveillance and target attack data. The Remotely Monitored Battlefield Sensor System (REMBASS) is one of these systems. It is a combination of seismic, acoustic, magnetic, and infrared sensors that are presently hand emplaced and remotely monitored. The sensors classify and detect and report movement of personnel and wheeled and tracked vehicles. REMBASS provides the tactical commander with an urgently needed all-weather, terrain-independent system for forward area operations, and a rear area intrusion detection and target development capability. It is a light, easily deployed, maintainable system that is well suited for contingency forces faced with wide frontages, extensive depths, and gaps between adjacent units. FY85 funds will be used to begin procurement of this fully developed program.


REMBASS
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INFRARED SENSOR DT 565
SEISMIC ACOUSTIC CLASSIFYING SENSOR DT 562

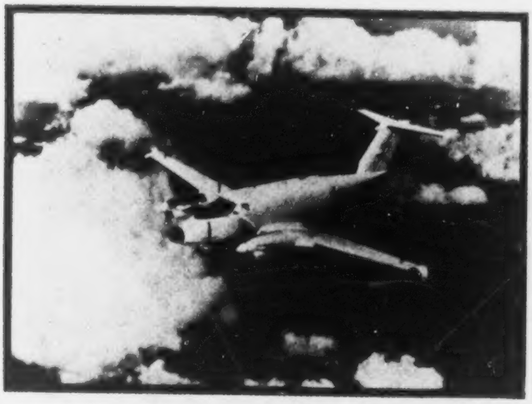
Modern sensor systems are capable of providing massive volumes of raw intelligence data. In order to be of use to the tactical commander, the collected data must be correlated, integrated, and interpreted with minimal delay. The manual processes now employed in the analysis of tactical intelligence information are inadequate to cope with the volume of collected data in sufficient time to satisfy the commander's needs. The Joint Tactical Fusion Program will remedy this situation through the introduction of automated tactical intelligence fusion systems for the Army and Air Force. The Army system, the All Source Analysis System (ASAS), will provide automated assistance to intelligence processing (fusion) and will also support related areas such as target development, collection and mission management of intelligence and electronic warfare systems, and operations security. The Enemy Situation Correlation Element will perform similar functions for the Air Force and is being developed concurrently with the All Source Analysis System. Maximum commonality in hardware and software is planned between the Army and Air Force systems to ensure that the ground and air commanders share a common perception of the enemy situation. Timely and accurate tactical intelligence is so critical to the effective conduct of combat operations that the development of automated fusion systems has been accelerated. Current plans call for fielding of baseline fusion systems beginning in the mid-1980's. These baseline systems will undergo evolutionary development leading to the fielding of objective systems before the end of the decade. FY85 funding supports continued development of baceline ASAS systems and provides for purchase of hardware needed to develop and integrate those systems.

The Joint Surveillance and Target Attack Radar System (JOINT STARS) will provide wide area surveillance of the battlefield. It will have both a moving and a limited fixed target capability permitting detection and location of targets such as fixed and moving vehicles, command posts, assembly areas, and low-flying helicopters and fixed-wing aircraft. JOINT STARS will broadcast simultaneously to multiple ground stations at division and corps, and will integrate with the All-Source Analysis Center and TACFIRE to provide both battlefield management and quick-reaction, realtime targeting. JOINT STARS also will be able to guide weapons, such as the Joint Tactical Missile System (JTACMS), to the target. Operational effectiveness will be enhanced by cueing from other sensors. FY85 funds will be used to develop the ground station, data links, radar, and modification to the OV-1D aircraft for acceptance of the radar.

Offensive electronic warfare operations are calculated to disrupt enemy command, control, and communications capabilities. This is an area where the Soviets may be vulnerable because of their rigid hierarchical structure. In such a system, the Soviet soldier depends almost exclusively on orders before acting. This lack of individual resourcefulness may well prove the Achilles' heel of the Soviet Army if we can impede the orders which flow from Soviet command headquarters. Every unit is tied by an electronic apron string to its next higher echelon. Disrupting the Soviets' communications network by means of electronic warfare may be a key means of slowing a Warsaw Pact attack, thereby making it vulnerable to eventual defeat.

The commander of a force needs to know what the enemy is doing. One way he can get this information is through communications and radars. Army systems to provide location and intercept of communications and radar emitters are mounted in aircraft or in wheeled or tracked vehicles. The TRAILBLAZER and TEAMPACK systems, which are currently being fielded, are ground-based systems whose targets are, respectively, communications and radar signals. The airborne systems are GUARDRAIL and QUICKLOOK which are fielded, and are being upgraded through product improvements.

Guardrail V is a combined airborne sensor and ground processing facility communication intelligence system with proven ability to provide near-realtime data on the location of enemy electronic emitters. The airborne sensor is carried in the RU-21H aircraft. Guardrail, in the RU-21H platform, has some limitations such as an unpressurized aircraft and limited frequency coverage. Thus, we are continuing the procurement of the Improved Guardrail (RC-12D), a system that corrects those limitations.



Guardrail

Quick Fix is an airborne offensive communications intercept and jamming system that will deny the enemy the use of his radios during key periods of battle.

It does this by intercepting and jamming enemy communications. Quick Fix is designed to operate against air defense units and maneuver units. Quick Fix I is currently employed in a modified EH-1H aircraft. Future Quick Fix II systems will be mounted in the EH-60A Black Hawk aircraft.

Quick Look II is an airborne, computer-controlled system mounted in a Mohawk aircraft that detects, locates, and identifies enemy radars. It provides tactical field commanders with timely data on enemy missiles, artillery, and antiaircraft weapons. The FY85 budget contains funds for product improvements to the aircraft and procures aircraft survivability equipment.

After the commander has identified the locations of enemy electronic emitters, he can then utilize his jamming assets.

Quick Look II

In the area of ground-based jammers, our Combat Electronic Warfare Intelligence (CEWI) units will be equipped with the medium-power AN/TLQ-17A jammer and the high-power AN/MLQ-34 TACJAM jammer. In addition, the Army is developing a family of low-power, expendable jammers that are designed for hand and remotely piloted vehicle emplacement, or delivery by artillery projectiles. Procurement of the hand-emplaced jammers begins in FY84. Additionally, the Army is equipping CEWI units with the VHF radio electronic countermeasures set, AN/VLQ-4. This device allows us to use our AN/VRC-12 series tactical radio to jam the enemy and provides an ECM training capability to both the active and reserve forces. The FY85 budget will support the continued development and acquisition of electronic countermeasures capabilities for active units and forward deployed organizations.

COMBAT SERVICE SUPPORT

The Combat Service Support major mission area is an aggregation of mission areas related to providing staying power to the combat force and maintenance and support to the weapons systems, support systems, their operators and crews. In this section we will discuss both air and ground mobility systems including the Black Hawk helicopter, our largest cargo trucks, our commercially adapted utility vehicles, and finally our armored recovery vehicle.

In the initial stages of most potential conflicts, we can expect to fight outnumbered and outgunned. Therefore, the commander must have the ability to move forces rapidly about the battlefield in order to optimize their overall effectiveness and to avoid decisive engagements with forces having superior strength. The key to this capability is enhanced mobility, both air and ground, which enables us to position our forces in the right place at the right time.

The Black Hawk helicopter, the high end of the high-low utility helicopter mix, will perform air assault, air cavalry, and aeromedical evacuation missions and answers the Army's need for improved battlefield mobility. Its predecessor, the UH-1, is an excellent and reliable helicopter, but is somewhat power-limited so that during hot weather and in high-altitude conditions, its payload is greatly reduced. Furthermore, in Vietnam we learned that we should reduce the vulnerability of future helicopters to small arms ground fire.

UH-60 BLACK HAWK

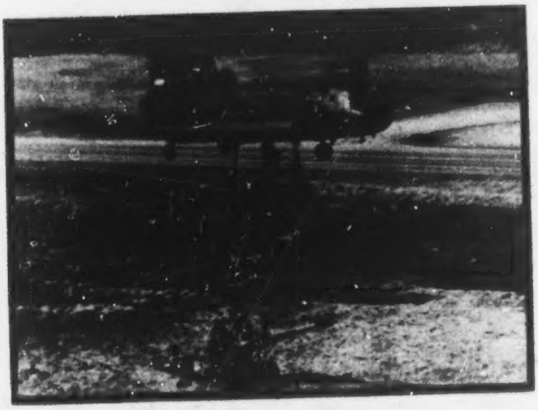
Black Hawk is clearly superior to the UH-1. It can carry more than twice the UH-1 payload and can transport a complete, fully equipped squad faster in most weather and altitude conditions. Black Hawk also adds significantly to the mobility of the division by having the capability to reposition equipment such as the 105mm howitzer, its crew of six, and up to 30 rounds of ammunition in a single lift.

The critical components in the Black Hawk are either armored or redundant to enable it to withstand multiple small arms hits. It is invulnerable to the 7.62mm armor-piercing round, and tests have demonstrated its ability to continue flight for a minimum of 30 minutes after sustaining damage from projectiles as large as the 23mm high-explosive incendiary round. The airframe is designed to absorb impact forces by progressively deforming on impact, thereby protecting the crew in a crash. The Army's experience in Grenada with the Black Hawk proved the aircraft to be very survivable.

BLACK HAWK

Black Hawk fielding for the 101st Airborne Division, the 82d Airborne Division, the 9th Infantry Division, and the 24th Mechanized Division and initial fielding for our units in Europe is complete. Fielding to Korea is in progress.

The Black Hawk is presently being procured under an FY82-84 multiyear contract, which has significantly stabilized the production base and produced substantial savings to the Government. This program has been so successful that the Army will request a follow-on (FY85-87) multiyear procurement. The FY85 request funds the first year of that 3 year multiyear contract. The program continues toward meeting the procurement objective of 1107 Black Hawks.



CH-47D Modification Program

Another element of the Army's Combat Service Support mobility team is the CH-47 Chinook medium lift helicopter. Its primary missions include the tactical movement of artillery, troops, and special weapons on the battlefield as well as the movement of ammunition, repair parts, petroleum, and aircraft recovery.

We are extending its useful life beyond the year 2000 by an extensive modernization program. In addition to life extension, the CH-47D helicopter has a greatly increased payload capability over earlier models. Composite rotor blades, T55-L712 turbine engines, advanced flight control system, single point pressure refueling, and modularized hydraulic systems have improved the reliability, availability, and maintainability of the aircraft. Initial delivery ceremonies for the first unit to receive the modernized CH-47D were conducted at Ft. Campbell, Kentucky, on 28 February 1983. The benefits of this program to the operational units have been demonstrated by an average of better than 85 percent full mission capability rate during the first year in the field.

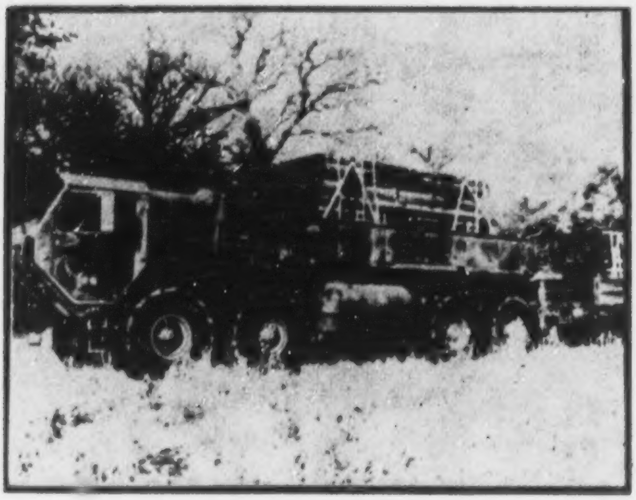
The FY85 budget will fund the 5th year of this effort and the first year of a proposed 48 aircraft-per-year multiyear procurement of the modernized Chinook. This will achieve a stable program with significant savings to the Government.

While other elements are essential to rapid resupply and mobility, tactical wheeled vehicles have been and will remain the backbone of our logistical system and are vital to the fielding of new weapon systems. We also have an aging fleet that adds to our problem. To meet these needs we have embarked on a program to buy the vehicles necessary to accomplish our mission.

5-Ton Truck

Heading the list of workhorses is the 5-Ton Truck. It supports the introduction of such major systems as the SGT York, Patriot, Pershing II, and TACFIRE, as well as meeting ammunition, general cargo transport, and other special-purpose needs. In FY81, a competitively awarded 5-year multiyear contract was signed with AM General Corporation for 11,394 improved 5-Ton Trucks, with an option to increase production by 100%. In addition to meeting critical Army requirements, the contract also provides vehicles for the Marine Corps, Navy and Air Force. In FY85 we will continue to acquire vehicles under the contract signed in April 1981.

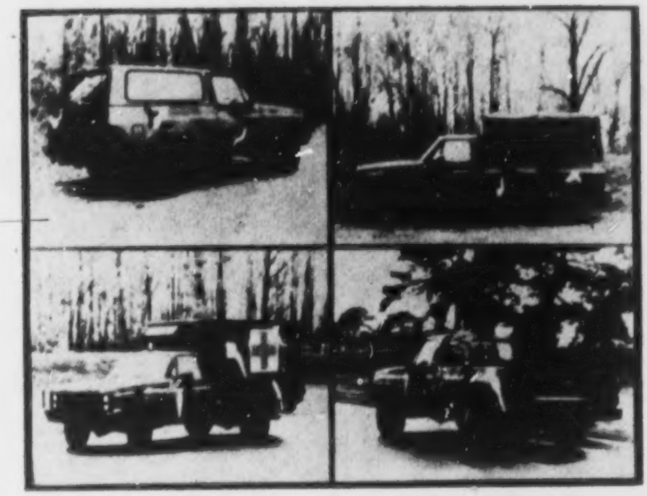
The Army 10-Ton Heavy Expanded Mobility Tactical Truck (HEMTT) program features an assemblage of commercial components. A competitively awarded five-year multiyear contract was signed with Oshkosh Truck Corporation in FY81 for 2,140 HEMTT's, with an option to increase the quantity by 250%. The HEMTT meets high-priority systems requirements, such as Patriot, Pershing II, SGT York gun, Multiple Launch Rocket System and tactical unit ammunition and fuel transport requirements. In FY85 we will continue to acquire vehicles under the contract that was signed in May 1981.



10-Ton HEMTT

Heavy tactical wheeled vehicles are critical for the transport of heavy cargo, fuel, and ammunition, but are not appropriate for use as utility vehicles or to carry light cargo. Such light-load requirements dictate the need for utility trucks. Presently, that need is satisfied by the M880, commercial pickup truck series of vehicles and to some extent by the M151 1/4-ton with a ¼ ton trailer and M561 Gama Goat. In the future this light-load or 5/4-ton payload requirement will be met by two vehicle families. The first vehicle family is the Commercial Utility and Cargo Vehicle (CUCV), which serves the needs of the Army, Marine Corps, Air Force and Navy.

As with the M880 series that it will replace, the CUCV is a family of commercially available, off-the-shelf vehicles adapted to meet military needs. It consists of cargo, utility, and ambulance versions and is a four-wheel-drive, diesel-powered vehicle in a nominal 5/4-ton payload category for use on primary and secondary roads. The CUCV also has some cross-country capability. The CUCV programs also complies with congressional direction to commercialize at least 20 percent of the M151 1/4-ton fleet. The CUCV began fielding in September 1983. The FY85 budget will support the last year of the 4-year multiyear procurement.



Commercial Utility Cargo Vehicle

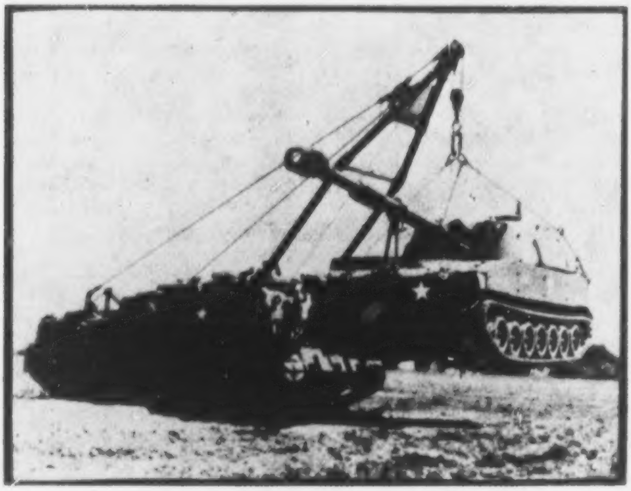
The other vehicle family in the 5/4-ton-payload category, is the High Mobility Multipurpose Wheeled Vehicle (HMMWV), which is complementary to the CUCV. The HMMWV is a nominal 5/4-ton-payload, diesel-powered, four-wheel-drive tactical vehicle that uses a common chassis with six body configurations: TOW weapons carrier, utility, ambulance, squad carrier, shelter carrier, and Stinger weapon carrier. Emphasizing the use of commerically available components, the HMMWV has excellent on- and off-road capability, with a range of 300 miles and a maximum speed of 60 miles per hour. This vehicle will replace aging and obsolescent vehicles in the light tactical fleet: the M561 GAMA GOAT, the M274 MULE, and, selectively, the M151 1/4-ton utility vehicle. It will perform in forward observer, forward air control, and other battlefield roles. This vehicle is one of our most important assets as we move toward lighter divisions. The HMMWV program also meets tri-Service needs providing vehicles for the Army, Marine Corps, and the Air Force. The FY85 Budget Request supports the third year of a 5-year multiyear contract.

HMMWV

We are pleased with the multiyear acquisition contracts awarded for these truck programs. We believe they are highly successful. One factor that contributes immeasurably to the attractiveness of these programs is the increased quantity that accrues when the Services pool their requirements, agree to commonality of the truck fleet, and take advantage of the commercial production base.

Accordingly, we are able to drive a better bargain with industry in a competitive environment and secure reasonable guarantees for quality, price, and schedule requirements. Such programs are attractive to industry because it can plan for several years of business rather than for one year at a time. These considerations foster private investment which enables higher productivity and a stronger industrial base. Our challenge for the future is to maintain the stability of our program funding to meet our existing, critical truck needs. An additional and important consideration is the logistics standardization that occurs among all the Services as a result of multiyear buys of common-use tactical vehicles. It's good for industry and good for the armed services.

Rounding out our combat service support transport requirement is the M88A1 recovery vehicle. The M88A1 supports the mechanized and armored combat soldier by recovering disabled tanks and other tracked combat vehicles from the battlefield. In the 1973 Mideast war, the Israeli Army demonstrated the importance of this capability by quickly recovering, repairing, and sending tanks back into the battle against a quantitatively superior enemy. This accomplishment was a key to the Israeli success.



M-88A1 Recovery Vehicle

Fielding of the M88A1 was initiated in 1977. A depot program to overhaul 863 gasoline-driven M88's and to convert them to diesel power was completed in FY82. The FY85 budget will fund the procurement of an additional 180 of these badly needed recovery vehicles.

Trucks and our other logistical support equipment give our soldiers the vital support they need to fight successfully in sustained conflicts. It merits your continued support.

Now that we have reviewed the mission areas that put combat power on the battlefield and sustain it in battle, we shall turn to the mission area that is essential for orderly execution of all battlefield missions--command, control, and communications.

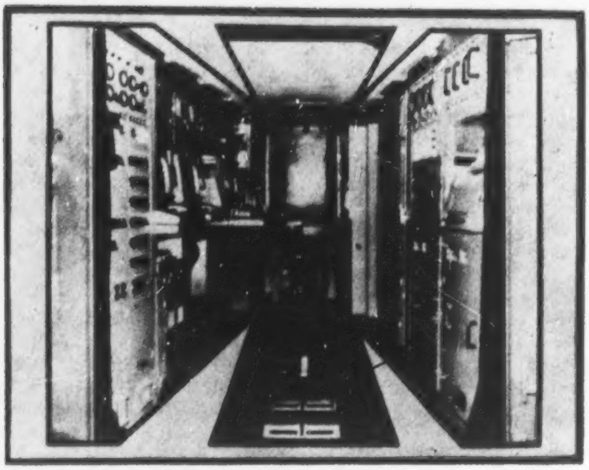
COMMAND, CONTROL, AND COMMUNICATIONS (C^3)

The command and control of our forces, and the communications which make it possible, are the keys to success on the battlefield. The C^3 function is analogous to the central nervous system of the body. The weapons and support systems discussed earlier are similar to muscles which react only on command and which function effectively only when they are controlled and coordinated. The systems discussed in the C^3 mission area provide the means by which we control, direct, and coordinate our forces. The importance of these systems cannot be overstated.

The C^3 mission area encompasses a staggering variety of demands and challenges. The demands range from a derivative of the Presidential "Hot Line," capable of transmitting the Presidential release orders to nuclear-capable units, down to a simple squad radio capable of functioning under the rigors of combat. The challenges relate to an almost unbelievable number of conditions and complications. C^3 systems are affected by natural and manmade interference and they are subject to enemy interuption, direction finding and jamming. Many C^3 systems must be compatible with the sophistication of fixed site operations in peacetime and provide mobile capability during hostilities. In addition, C^3 systems must usually be compatible and interoperable with our sister Services and NATO allies.

Communications technology is a field in which the US possesses a degree of expertise that is the envy of the world. Due to affordability constraints, however, the Army's C^3 equipment has not kept pace with this technology advantage. The situation is getting better because of the increased emphasis on C^3 at all levels and the many modernization initiatives being pursued. With your support we will close the technology gap during the decade of the 1980's and will move from an era of grease pencils and manual switchboards to one in which the readiness of the Army's C^3 systems will be significantly improved by the systems we will now discuss.

The Army recently reassessed its communications architecture to insure that it was purchasing the correct mix of equipment to efficiently and effectively meet its battlefield needs. The major program included in this review was the Joint Tactical Communications (TRI-TAC) program, a Joint Service and DOD Agency program to develop and field future tactical multichannel switched communications. The broad goals of the TRI-TAC program are to achieve interoperability between Army and other DOD telecommunications systems, provide new equipment that reflects the most recent technology,



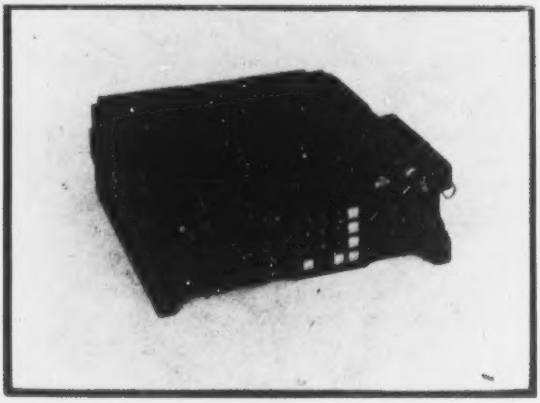
TRI-TAC

eliminate duplications in development among the Services, and enhance interoperability with NATO systems.

The TRI-TAC family of equipment consists of digital telephone and message switches, mobile subscriber equipment, secure and nonsecure phones, subscriber terminals, multichannel radios, tactical facsimile equipment, and many other associated items. This equipment is urgently needed to replace the obsolete, nonsecure, manpower-intensive, and predominantly manual communications equipment currently in the field. TRI-TAC equipment is designed to provide for an evolutionary transition from analog communications to modern and flexible digital communications.

TRI-TAC equipment employed with the Army's Integrated Tactical Communications System (INTACS) will provide automated circuit and message switching; voice, record, and data security; and automated control facilities. The FY85 request will provide for continued TRI-TAC development as well as procurement of smaller unit-level switches and transmission and terminal equipment.

Another part of the Army's TRI-TAC program responsibility is the procurement of Mobile Subscriber Equipment (MSE) that will be used by corps and division commanders for secure, mobile communications. FY85 funds will be used to begin procurement of Non-Developmental Items (NDI) in support of MSE.



SINCGARS

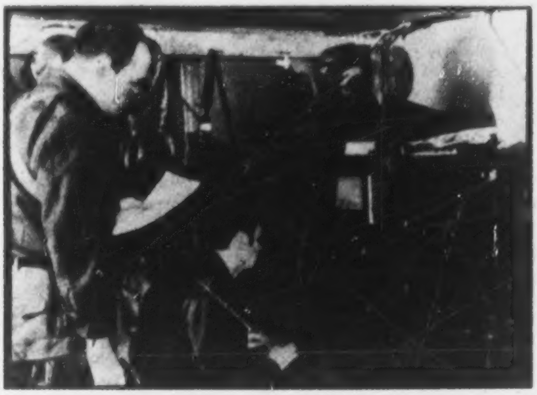
The Army does not presently have a tactical net radio system capable of operating in an electronic countermeasure environment. The Single Channel Ground and Airborne Radio System, (SINCGARS) will give the soldier a reliable jam-resistant, securable radio system capable of operating on the move and compatible with current vehicular radios and associated communications security equipment. The FY85 budget request continues the accelerated production of this urgently needed combat radio.

Any future conflict will require combat commanders to rapidly and precisely locate and identify their own forces, as well as other friendly units, on a highly mobile and extended battlefield. The Position Location Reporting System (PLRS), a joint program with the US Marine Corps, will give us that capability. It is cryptosecure, highly resistant to jamming and can be used in all weather and terrain. In the future, PLRS will be integrated with the Joint Tactical Information Distribution System (JTIDS) Class 2 terminal to form the Army Data Distribution System (ADDS). It will provide the Army with a reliable, jam-resistant, data communications, navigation, and identification system for use in the five primary functional areas which require C^3 on the battlefield: maneuver control, fire support, air defense, electronic warfare/intelligence, and combat service support. We consider attainment of this capability a high priority for successful combat operations. Hence, the Army and Marine Corps initiated production of PLRS under a multiyear production contract in FY83 which will result in initial system fielding (of PLRS) for both services in 1986.

The FY85 request provides for the third year of the 4-year multiyear contract. For the Army, the PLRS production contract establishes a production base for the follow-on ADDS system.

PLRS

The commander's perception of the battlefield is an aggregation of volumes of information emanating from many different sources in the form of reports, estimates, plans, and orders. Computer-aided management is required to provide a comprehensive, timely and common picture of the battlefield for effective resource allocation decisions. The Maneuver Control System (MCS) has been developed to answer the need. It is a network of computer devices located at command posts from corps through battalion levels linked together by standard Army communications equipment. The decision making process is supported through a combination of hardware and software which allows the tactical commander quick access to near-realtime information describing enemy/friendly situations displayed graphically on a map background or in standard text formats. Once a decision is made, MCS automates the order preparation process and distributes the completed orders via digital burst transmission, in milliseconds, simultaneously to subordinate units for execution. Over the past 3 years, MCS prototype hardware has been used in European corps exercises as the baseline from which the production system has evolved. A division commander participating in the corps level operational evaluation of MCS during REFORGER 82 attributed the successful execution of more than 20 brigade and battalion level counterattacks to the timely and comprehensive information generated by MCS. The final system will be comprised of fully integrated, ruggedized Non-Development Item (NDI) equipment at corps/division and full-militarized devices at brigade and lower echelon command posts. The evolutionary development of this system will continue in FY85 with the completion of the operational software and the MCS NDI evaluation. Procurement will continue with MSC initial fielding scheduled for in FY85.



Manuver Control System

Tactical Satellite Communication (TACSATCOM) systems support the ground mobile forces of the Army, Navy, Air Force, and Marine Corps by providing reliable and effective communications between widely dispersed and rapidly moving forces. Each of the systems uses a communications satellite as a relay station between terminals. Terrain is therefore less of a constraint for employment of TACSATCOM systems than for regular terrestrial systems.

Presently, one multichannel system and two single-channel systems are being fielded. The single-channel systems operate in the ultra high frequency range.

Production of the single-channel Special Communications System, AN/MSC-64 which provides secure command and control communications from the National Command Authority to special weapons units worldwide was completed in 1983. In addition, a two-year production contract has been awarded for a single-channel UHF manpack for use by Special Forces and Ranger Units. Deliveries of the UHF manpack will begin in early 1984. The FY85 request will be used to purchase 42 sets. The Multichannel Initial System, AN/TSC-93 and AN/TSC-85A, provides tactical satellite communications down to brigade level. Terminal fielding and production of our antijam control modem to provide ECCM protection for this multichannel system will also begin in 1984. FY85 funds will provide for continued production of these systems.

To meet the severe postulated Electronic Warfare (EW) threat of the future, one single-channel and one multichannel Extremely High Frequency (EHF) system will be fielded. The Single Channel Objective Tactical Terminal (SCOTT) system will provide such a jam-resistant satellite communication link. Advanced development was completed in 1983 and limited production is scheduled to begin in 1984. Procurement will continue with FY85 funds. In addition to SCOTT, a Multichannel Objective System (MCOS), also jam-resistant EHF, is continuing development in FY85 with planned deployment during the late 1990's in conjuction with an appropriate USAF-managed space segment.

The Defense Satellite Communications System (DSCS) is a worldwide military satellite communications system which supports Presidential communications, the National Command Authority, the Worldwide Military Command and Control System (WWMCCS), the Diplomatic Telecommunications System, and tactical/strategic C^3I requirements of the Military Departments. DSCS terminals are also compatible with and can use NATO military satellites. DSCS provides rapid deployment joint task forces with communications both within theater and on a worldwide basis. It is the only capability in existence to satisfy strategically critical wideband command, control, and intelligence communications.

DSCS is a joint program with the Air Force responsible for the space segment and the Army for the ground subsystem. In the past few years, the Army has undertaken a complete upgrade and modernization effort that will result in the development, procurement, and worldwide installation of a new generation of large, medium, and small transportable satellite terminals. Many of these terminals will be equipped with digital communications and antijam equipment. A new automated system that will control the DSCS satellites in orbit as well as communications that pass through the satellite is being developed.

In support of the DSCS, the Army is completing procurement of 34 AN/GSC-49 satellite terminals in FY84 for the Jam-Resistant, Secure Communications (JRSC) program. JRSC will support the Tactical Warning and Tactical Assessment System (TWTA), WWMCCS, and the National Command Authority during enemy jamming or periods of highly volatile world conditions. Procurement of the Satellite Communications Control Elements (SCCE) with FY85 funding will provide essential controls for the DSCS III Satellite.

The NAVSTAR Global Positioning System (GPS) is a satellite-based radio navigation system that provides users with rapid data about position, velocity, and time. When fully deployed, the system will consist of 18 satellites and thousands of user terminals.

GPS employment includes units that normally operate at great distances from their home bases, such as cavalry, pathfinders, and Special Forces as well as selected users to included all Army aircraft, throughout the theater Army. It will also serve as an "initializer" for other position/navigation systems.

The joint GPS Program Office is staffed by Army, Navy, Air Force and NATO personnel, with the Air Force as lead. The Army is participating in the joint development of a family of manpack, vehicular, and aircraft user terminals. Testing of the first Army user terminals is scheduled to begin in 1984. The FY85 request will provide for initial production of these terminals.

TECHNOLOGY BASE

The Army's long-range planning process was mentioned previously in connection with our efforts to stabilize the acquisition process. Our long-range plan also provides the focus for the Army's technology efforts and overall research and development program. This is extremely important, since we must rely on our technical capability in order to balance Soviet quantitative and qualitative superiority. R&D funds are truly seed money for the future.

This year's long-range plan covers 15 years--FY86-2000--and lays out how the Army will develop and acquire the materiel it will need to fight in the 1980's and beyond. It also allows us to examine affordability early in the development process. As part of the plan's formulation, Army Staff planners look to both the combat developer, who speaks for the soldier in the field, and the materiel developer, who analyzes our technology. In this fashion, the long-range plan balances our needs with production opportunities and capabilities. This balance insures that we are on the correct path to achieve the global response capability our Army requires. Our objective is to retain technological superiority where we have it, regain it where we have lost it, and exploit it to maximize combat effectiveness.

The battlefield of the 1990's and beyond will require Army forces that are light, agile, and lethal. These forces will have to fight a very "fluid" type of combat, often operating independently from other forces. They will have to fight outmanned and outgunned. To meet the challenges of the 1990's and beyond, the Army will place greater emphasis on "leverage" technologies which offer the potential for innovative, revolutionary change in military systems and capabilities. Examples of such technologies include:

o VHSIC (Very High Speed Integrated Circuits), that will provide substantially more capable computers and processors needed for complex military application such as automatic target recognition. At the same time VHSIC offers significant increases in reliability as well as reduced weight and volume;

o Advanced material technology to combine light weight, corrosion resistance, ballistic tolerance and other needed properties in tailored military structural application;

o Advanced visible and infrared spectrum optical technology including integrated optics, focal plane arrays, epitaxial growth and multispectral components that will greatly improve sensor capabilities to detect and identify targets;

o Millimeter wave technology that will permit sensors to "see" and terminal homing missiles and artillery rounds to engage targets through battlefield smoke, fog, and dust;

o Biological technologies that can be used to develop reliable, quick-acting disease-detection systems, vaccines, and antidotes;

o Artificial intelligence systems that can be used to maximize the results that human operators can obtain from machines and also permit remote control of hazardous operations and tactical robotic concepts.

The Army's new thrusts in technology are designed to integrate, focus, and apply leverage technologies and other existing technologies in the following areas:

o Very Intelligent Surveillance and Target Acquisition (VISTA) technologies will permit the combination of sensor systems and the "fusion" of information needed by Army commanders in a rapidly changing battlefield environment. The near-realtime presentation of ground based and airborne radar, optical and human intelligence will increase effective use of our Army's fighting assets. Technology demonstrations will include ground and aerial VISTA platforms and mobile ground Combat Information Processors (CIP).

o Distributed Command, Control, Communications, and Intelligence (DC^3I) technologies will dramatically improve reliable distribution of battlefield information among all levels of command. Use of digital burst transmission techniques, millimeter wave and higher frequency spectra and fiber optics will provide greater jam-and intercept-resistance and needed continuing information transmission. Technology demonstration will include distributed command and control networks and VISTA communications networks.

o Self-contained munitions technologies will allow munitions to autonomously search out, select, and home on hostile targets. Expected benefits include increased "kills" per missile or round fired, greater survivability for the launch vehicle or battery, and lower cost per kill. Technology demonstrations will include a fiber optic-guided missile and quiet radar for air defense systems.

o Soldier-machine interface technologies will improve training, expand individual capabilities, and make it easier to operate sophisticated equipment. The precepts of effective soldier-machine interface will underlie all other technology thrust efforts and will also be emphasized in ongoing engineering developments and product improvements through increased emphasis on human factors engineering analysis.

o Biotechnology offers the opportunity to assist in the prevention and treatment of casualties through new classes of vaccines, antidotes, and treatment compounds. Several approaches, including monoclonal antibodies and recombinant DNA, make it possible to engineer very specific biological elements having highly effective diagnosis prevention or treatment properties. Technology demonstrations will include a system for detecting chemical and biological agents, systems for rapid identification and diagnosis of disease, and various new vaccines.

Since FY83 the Army has focused its technology base resources on these leverage technologies and thrust areas in order to accelerate their application through force modernization product improvements and in evolving new systems. For FY85, funding will be significantly increased in communications, electro-optics, biotechnology and human performance and engineering.

BALLISTIC MISSILE DEFENSE

Since the March 23, 1983 speech by the President in which he announced the goal of eliminating the threat posed by ballistic missiles, a national ballistic missile defense (BMD) program called Strategic Defense Initiative (SDI) was established under the centralized management of the Office of the Secretary of Defense (OSD). The current Army Program has received renewed interest and increased emphasis within the developing management scheme and will play a key role in achieving the President's goal.

After the Congressionally directed termination of the Army developed BMD SAFEGUARD system in 1975, the U.S. has not had a deployed BMD system, but a continuing R&D program has matured promising new technologies and refined system concepts so low-risk, technically advanced solutions are available for full development and deployment. The potential for highly effective defensive systems has never been greater. New system concepts hold promise for countering attacking missiles in all phases of their trajectories. Progress has been equally dramatic in expanding and advancing the technology base from which these future BMD systems will evolve. As a result, the program is in a position to make substantial contribution to the Strategic Defense Initiative technology efforts.

The Army BMD program has been conducting R&D aimed at increasing the capabilities and effectiveness of defensive systems for over 25 years. Because of these efforts, the Army has an established BMD organization with a pool of experienced people, an extensive technical data base, and a capable industrial team to go forward toward early demonstrations of defense capabilities.

Major program thrusts are aimed at defining system concepts and requirements and maturing the technologies necessary to support them. Significant effort will be put into defense definition, to include demonstrations of aircraft mounted optical sensor adjuncts and nonnuclear kill. Kill mechanisms not requiring the use of nuclear warheads for employment within the atmosphere (Endoatmospheric Nonnuclear Kill-ENNK) and outside of the earth's atmosphere (Exoatmospheric NNK) provide very attractive approaches for increasing BMD capabilities.

Important demonstration programs are underway in both atmospheric and space regimes. In addition, work will continue on a terminal (atmospheric) defense radar and data processor. Advanced technology work, to expand the base from which new systems will evolve, will continue on a broad front, including research on beam weapon technologies, advanced sensors, data processing, and missiles.

System concepts being examined include both atmospheric and space defenses. The integration of these into a true defense in depth provides a logical growth path for BMD to move toward the elimination of the threat of ballistic missiles.

The current Soviet force expansion points up the need to provide a wide range of future options for a defense in depth to counter a continued buildup of the Soviet threat in both quantity and quality. These options provide great flexibility when considering potential BMD missions.

Although ICBM defense was long considered the primary mission for BMD, other roles for strategic defense have become central as the list of potential applications for BMD lengthens. For example, a defense in depth could provide protection to critical military installations and other softer targets. By pursuing a broad based effort, the BMD program maintains the flexibility to provide defense options for many different applications and thus support the President's goal.

The BMD Program also operates the Kwajalein Missile Range (KMR). The simultaneous use of KMR for both strategic offensive and defensive program testing provides a unique opportunity to collect realistic data vital to both efforts. The ability of the BMD program to observe and analyze developmental and operational firings allows cost savings in the tens of millions of dollars yearly. Kwajalein is the only range in the free world that can accommodate full-scale ICBM tests and provide sophisticated data collection for the terminal and midcourse portion of the trajectory. KMR is a unique national resource, utilized by the Services, NASA, and other government agencies.

The Army BMD program, through its broadly-based R&D efforts, seeks to develop multi-tiered defense capabilities and conduct early demonstrations of critical defense components. The development of nonnuclear kill systems will continue to receive high priority. At the same time, the program is oriented to protect a BMD capability in order to deter ABM Treaty breakout. The BMD program, by building on the existing infrastructure and emphasizing evolutionary development, is able to accomplish these goals and offer a wide range of options for the defense of the country.

MEDICAL RESEARCH

Together with modern battlefield weapons systems, the soldier must be considered a "system" and, as the operator, is the most vulnerable and critical component in the array of battlefield systems. The Army medical research and Development Program is geared to address the factors that could make this system inoperable or cause it to operate at reduced efficiency due to physical, psychological, or disease-related stresses in a variety of climates and hostile environments, both in peacetime and during periods of hostilities.

Many of the normal, daily hazards to the soldier come from sources such as blast overpressure from artillery, combustion fumes from explosions, and radiation from laser, microwave, and radar systems. Army Medical Research addresses these environmental and occupational hazards.

Advances are also being made to aid the soldier in dealing with natural stresses. These include heat, cold, altitude, sleep deprivation, exhaustion, and the psychological strain of the battlefield. However, our personnel are more likely to become casualties from infectious diseases that have decimated military forces during past wars than from any manmade weapon system. Recent progress in this area has provided us the ability to prevent many diseases by use of vaccines or treatment if a soldier is afflicted. In the tropical or remote parts of the world, there are deadly diseases for which we have neither cures nor means of prevention.

Even malaria, for which many cures have been developed, keeps changing genetically in the face of antimalarial drug use in endemic areas. New antimalarial drugs, designed to be effective in single dose treatment regimens, are being tested for safety and tolerance.

Diarrheal diseases, sand-fly fever, Rift Valley fever--to mention just a few--pose a threat to troops in areas such as the Mideast, even in the absence of combat. Genetic engineering technology, which permits economical production of large quantities of biologically active materials, were used to develop a typhoid/shigella vaccine that is effective against some diarrheal diseases. Field trials are targeted to start in FY84 or FY85 after completion of laboratory studies. Genetic engineering has also speeded the development of vaccines for rickettsial and viral diseases, so that clinical trials can begin in FY84. Q Fever, tickborne encephalitis and Rift Valley Fever are vaccines in which early trials will be conducted. Argentinian hemorrhagic fever vaccine will be tested in FY85. New monoclonal antibody techniques were used to produce highly pure and specific antibodies necessary for the diagnostic tests and procedures for rapid identification and diagnosis of BW agents and natural diseases that are in advanced development. This technology has also enhanced detection of nerve agents and toxins.

During periods of hostilities, the soldier may be incapacitated or working at reduced efficiency from the effects of chemical, nuclear, or biological weapons. Enemy use of nuclear, chemical, or biological warfare is a matter of conjecture, but it is an eventuality for which we must prepare. Therefore, to keep the soldier going, we are developing modern techniques for disease prevention, patient management, decontamination, and resuscitation in an NBC environment. The new Mark I autoinjector to counter nerve gas exposure was provided to active Army units in January 1983. Research thrusts on improved nerve agent antidotes and drug delivery approaches continue. FY85 goals include the determination of the stability of mixed antidotes and improved antidote injector devices. Other goals include: soldier decontaminants, chemical warfare (CW)-resistant patient litter, a "patient wrap" that protects patients in contaminated environments, and an expanded industrial manufacturing base technology for the development of Department of Defense (DOD) unique medicaments. In the more traditional areas, techniques are being improved and materiel developed for the prevention, diagnosis, and treatment of combat casualties.

Improved treatment of combat casualties requires earlier diagnosis and treatment of shock. Major efforts are being directed toward battlefield production of oxygen and medically pure water for reconstitution of resuscitative fluids thereby circumventing logistical constraints of transporting oxygen tanks and improving the forward capacity for early treatment of shock. Advances in this area should markedly reduce cube/weight requirements on the battlefield and combat support area. The development of the new medical aidman's bag is finished and this item has been forwarded for production.

Current combat dentistry research is directed at producing synthetic materials which are compatible with the body and can simplify and improve the repair/healing process for injury to jaw and mid-facial bones; new treatment modalities which can prevent or treat related wound infections, and field dental equipment.

Significant achievements last year were: A moldable, biodegradable material which hardens in 45 minutes invivo was developed and has been successfully implanted in injured bone in experimental animals (healing bone replaces this material as it is absorbed by the body); a medicant-containing polymer implanted in bone injuries has produced good results in enhancing early healing; and an experimental prototype miniature fluoroscopic field dental X-ray device was produced.

FY85 goals include: expanded trials for a microencapsulated antibiotic and the development of additional antibiotics; and studies using a cellulose triacetate bandage with the capability to release antibiotics over an extended time to combat infection of topical wounds.

Research in stresses to the soldier-operator produced by weapon systems and natural environmental extremes has resulted in: completion of a Health Hazard Assessment of the vibration transmission characteristics of the Apache Helicopter and Multiple Launch Rocket System; and evaluation of the beneficial effects of increased fluid intake on the prevention of heat stress casualties. Anticipated FY84-85 milestones include: development of water quality criteria for potability for emergency use (e.g., Rapid Deployment Force), to include health protection and palatability considerations under increased consumption; and development of up-to-date vision standards for Army aviators along with new test methods for evaluating vision.

These accomplishments are merely a few of the highlights of an extremely complex and broad research effort encompassing all aspects of potential hazards to the soldier, the crucial "system" on the technologically complex modern battlefield.

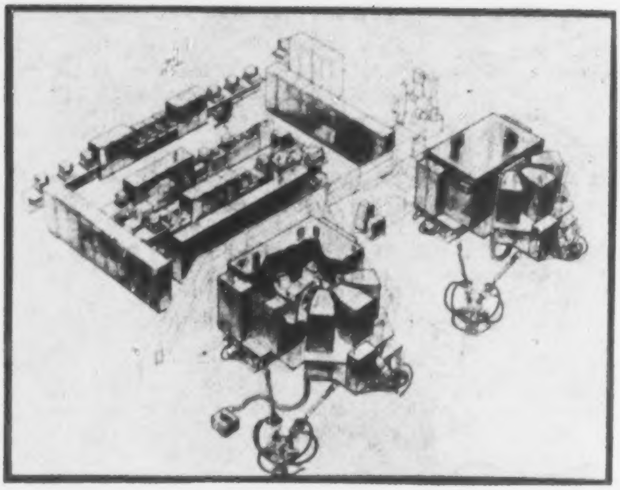
TRAINING SIMULATORS

The FY85 request reflects the Army's commitment to increase use of simulators. We are aware that a future Army, with all the new weapon systems we are developing, cannot train to fight on the next battlefield without them.

While training with real equipment gives soldiers and their leaders confidence that it will work in combat, training with simulators allows soldiers to repetitively practice techniques which, if performed on the actual equipment or with live ammunition, would be too hazardous, too time-consuming, or too expensive. These training devices are used in conjunction with the major piece of equipment to provide the Army with the capability to maintain and improve the combat readiness of soldiers, crews and weapon systems, to reduce training and operating costs, to conserve scarce resources such as fuel, weapons, and ammunition, and to teach skills not attainable with operational equipment (i.e., maneuver and shoot without being killed). Training technology, much of which employs videodisc, computer-generated imagery, or lasers, is a US strength which is being exploited to insure that American soldiers and their leaders can shoot, operate, maintain, and fight their new equipment as close as possible to its capabilities.

Training devices and training simulation produce force multipliers that provide combat effectiveness at a lower training cost. The combat effectiveness of Army personnel is key to both compensating for the numerical superiority of opposing forces and for maintaining a ready force. This combat effectiveness can best be achieved by innovative, efficient, and results-oriented training. The major thrust in the development of new training devices is to develop equipment that allows a high transfer of knowledge and experience from the training situation to a combat situation.

The Army's past investments in research and development of training devices are coming to fruition in FY85 as numerous devices enter or continue in the production phase. Among these devices are the Remoted Target System, which is the target mechanism component of the Army's Range Modernization Program; the Army Training Battle Simulation System, which is a computer driven war game for combined arms operations training of battalion level commanders and staffs; the Unit Conduot of Fire Trainer, which is a gunnery trainer for Abrams Tank and Bradley Fighting Vehicle crewmembers; the Multiple Integrated Laser Engagement System (MILES) for M1/M2/M3, which is a family of eye-safe laser devices that attach to weapons to realistically simulate the firing capabilities of rifles, machine guns, and other direct fire



Flight Simulator Complex

weapons and to instantly simulate the casualty-producing effects of direct fire weapons, thereby providing a capability to conduct force-on-force tactical engagement simulation field exercises with enhanced realism and feedback to teach lessons heretofore learned only in actual combat; the Air Ground Engagement System, which is MILES (multiple integrated laser engagement system) for aircraft and air defense weapon systems; and Flight Simulators, such as the Combat Mission Simulator for the AH-64. Weaponeer, which uses a scaled-down mock range and high intensity light coupled with a microprocessor and monitor to teach soldiers basic rifle marksmanship, began fielding in FY83 and will continue through FY86.

This budget reflects the Army's commitment to provide realistic tactical engagement training to the combined arms by funding efforts to simulate indirect fire and expand MILES use to more types of weapon systems. Fielding MILES for ground direct fire, aircraft, and air defense weapon systems has provided unparalleled opportunities for realistic, two-sided, tactical training worldwide. We have added money in FY85 to provide the National Guard with additional sets of MILES.

Also included in this budget are efforts to achieve long-term economies and to improve the maintenance of proficiency through the use of microprocessors and lasers to provide precision simulation in lieu of live fire. The Army has a continuing need to expand the technology base for training devices and simulation to support the development of training environments and training systems that provide the training required to win in any conflict.

PROGRAMWIDE MANAGEMENT AND SUPPORT/RDTE MANAGEMENT

A critical foundation for the acquisition of materiel systems is the R&D management and support base consisting of the RDTE headquarters, supporting laboratories and test facilities. Success in acquiring modern systems is directly dependent on the welfare of this base. Dramatic advances in system technology and complexity demand a complementary modernization of this RDTE management base. The resources for RDTE and base operations must be commensurate with those of supported programs, to include funding, facilities, laboratory equipment, test instrumentation and high quality professional personnel. We must also provide resources for activities that are not related to specific RDTE projects, such as common service support at RDTE-operated installations and headquarters.

The need to upgrade and modernize laboratory equipment has become urgent, since much of it is based on 1950-1960 state-of-the-art. Application and exploitation of industry and Government-developed technology is dependent on modern and well-equipped laboratories manned by trained, educated and experienced scientists, engineers and technicians. The upgrade is overdue and needs to be done as fast as we can afford it.

Our major ranges and test facilities conduct development and production tests to provide superior, supportable and survivable systems. The key to excellent and cost effective testing is the instrumentation for testing which must be as modern as the systems under test. Efficient instrumentation has a dramatic impact on the costs of testing as well as demonstrating that the systems will be operationally suitable. Testing must include realistic testing in operational environments which requires special instrumentation and a good threat simulator capability. For example, modernization of Dugway Proving Ground will begin in FY85 to completely upgrade its test instrumentation facilities and housing to cope with the expanded test workload for chemical warfare, chemical and biological defense and smoke munitions systems. Since test facilities are RDTE installations, sufficient funds must also be included for base operations and logistic support, particularly for maintenance repair.

We urge your approval of the FY85 funding of this vital base which supports all we do in developing and fielding Army systems. The FY84 funding was less than adequate. Deterioration and obsolescence will increase. Requested FY85 funding will bring the base programs back to the necessary level of effort, while providing additional funds for modernizing Dugway Proving Ground. Your approval of these critical funds will provide for operating the base while keeping pace with new technology and checking deterioration.

CONCLUSION

The FY85 budget request represents our best effort to provide a balanced program to equip the Army. It doesn't attempt to outproduce the Soviets, but it does strive to insure that our units have the equipment they are authorized, and that our soldiers are equipped with weapons and equipment that are as good as the Soviets'--and in many cases better than the Soviets'.

Thanks to our research and development efforts during the 1970's, we are ready to field many of the new weapons and equipment our soldiers need. However, in order for us to provide our Army with the capabilities that we have described, we need continued strong congressional support. Our new systems will only make a difference if they are in the hands of our troops on the battlefield. We also need your continued support of our RDTE programs.

With your help and the support of the people, we will provide our Army with what is needed in order for it to be ready should it be called upon to protect this nation's vital interests.

Senator **Goldwater**. Gentlemen, thank you very much for presenting your program. Additional questions will be submitted to be answered for the hearing record.

[Questions, with answers supplied, follow:]

Questions Submitted by Senator Barry Goldwater

U.S. ENGINEER VERSUS SOVIET COMPARISON

Senator **Goldwater**. I note from your biography that you are an engineer with background in academia at VMI. You mentioned in your statement that Soviets are graduating five times as many engineers as we are. Can you expand on this—how good are their engineers?

Dr. **Sculley**. The Soviet Union annually graduates almost five times the number of engineers graduated by the U.S. Over 300,000 Soviet engineers graduated in 1982, while the U.S. graduated less than 70,000 (bachelors and masters degrees). By Western standards, the Soviet Union has made large investments in developing the world's largest research and development manpower force of scientists and engineers. The figures alone do not realistically represent Soviet capabilities. [Deleted.] These problems are highlighted by the narrowness of Soviet higher technical education, in which engineering students specialize in narrow areas, such as machines and equipment for chemical fiber production. In depth training in such areas is often achieved at the expense of more general training such as chemical or mechanical engineering. The Soviet objective is to provide industry with trained engineers for specific jobs. Soviet engineers working in research tend to be too narrowly specialized to take advantage of new ideas in fields outside their narrow specialty.

Notwithstanding the above, there is every reason to be concerned about the Soviet initiatives to upgrade their engineering capabilities. There are numerous specific examples where Soviet performance is equal to or better than Western performance. The issue of U.S. technology literacy is serious and penetrates to the foundation of our educational system. This fact is recognized and numerous efforts, public and private, are in progress to improve our technical and engineering posture. The problems are not only institutional, but also demographic. The pool of American youth capable of obtaining quality education in engineering peaked approximately five years ago. Consequently the U.S. has a problem of both quality and quantity as we look to the future.

TADS/PNVS

Senator **Goldwater**. Dr. Sculley, you may have heard that this committee has a continuing interest in the progress of the AH-64 program.

Dr. **Sculley**. Within the last few weeks the Army successfully completed the negotiations for the fiscal year 1984 purchase of AH-64's.

Senator **Goldwater**. Does that contract represent any cost growth over the cost you had predicted for those aircraft last year?

Dr. **Sculley**. No. Contracts procuring 112 aircraft, TADS/PNVS and engines have been definitized within the amount appropriated for fiscal year 1984. Last year's fiscal year 1984 budget request totalled $1465.6 million, including $1297.5 million for basic weapon system procurement and $168.1 million for initial provisioning. Congressional reductions, and revised economic assumptions resulted in a fiscal year 1984 appropriation total of $1360.4 million, of which $1191.7 million is for basic weapons system procurement and $168.7 million is for initial provisioning, a net reduction of $105.2 million from the budget request.

Senator **Goldwater**. Do you anticipate any cost growth in the AH-64 program?

Dr. **Sculley**. No. Contracts for the first three production lots of Apaches totalling 171 aircraft have been negotiated without cost growth. The Army remains dedicated to procure the Apache without any cost growth, however, we need the support of the Congress in maintaining the planned economic production rate of 12 aircraft per month in order to achieve that goal.

Senator **Goldwater**. Have you encountered, or do you expect to encounter, any problems with the production schedule of the Apache?

Dr. **Sculley**. The Apache production at Mesa is building up rapidly. All fiscal year 1982 aircraft are in process in the Mesa facility. Production Vehicle 1 (PVO1) was accepted by the Army in January 1984, one month ahead of schedule. PVO2 acceptance is scheduled for the end of March 1984. Hughes Helicopters is experiencing normal start-up/build-up difficulties, but none significant thus far.

Senator **Goldwater**. Have you encountered any problems with the performance or production schedule of the TADS/PNVS system? If so, what are they?

Dr. **Sculley**. While we have encountered some problems during the transition to production, TADS/PNVS continues to meet performance requirements. Martin Marietta's production deliveries are approximately two months behind their contract schedule, however, this is not expected to impact Apache deliveries.

M1

Senator **Goldwater**. We have been advised that General Dynamics, when it took over from Chrysler, made improvements in the production plant and reduced manpower requirements by 40 percent. Can you comment on this and tell us if that reduced manpower requirement is reflected in your fiscal year 1985 budget request?

General **Merryman**. Based on General Dynamics historical data, the manufacturing and inspection hours, i.e., direct labor hours, were reduced from 9,402 hours per tank in April, 1982 to 5,758 hours per tank in January, 1984; a reduction of 38.8 percent in man-hours. This reduction in hours was combined with other factors to determine the budget required for fiscal year 1985.

Senator **Goldwater**. I understand you are having some major problems in adapting the 120mm gun to the M1. Give us a status report on that effort—what will it cost per tank?

General **Merryman**. Very few problems have occurred in the integration of the 120mm gun system into the tank. The larger, heavier gun required a new gun mount and recoil system which has successfully been tested. The accuracy of the M1E1 weapon system has been demonstrated in the field. During Operational Testing at Fort Hood, Texas, the M1E1's accuracy has at least equaled that of the M1. Developmental testing at Aberdeen Proving Ground and the Cold Region Test Center indicates the 120mm gun has been satisfactorily integrated into the M1 Tank. There was an ammunition fratricide problem, i.e., penetration of the ammo compartment resulted in detonation of more than one round of ammunition. A less sensitive warhead explosive and new anti-fratricide bars have been tested with successful results. The overall price increase for the 120mm gun is $103K which includes gun cost (52K), ammo racks (10K) and fire control and other integrated costs (41K).

Senator **Goldwater**. Is there any consideration in the Army to dropping the 120mm gun option from the M1.

General **Merryman**. The Army does not intend to drop the 120mm gun option from the M1E1 tank.

Senator **Goldwater**. Where is the Army going after the M1, do you have a new tank on the drawing board?

General **Merryman**. The Army continuously monitors threat vehicle development and emerging technologies applicable to armored combat vehicles in light of Army missions and doctrine development to support Air Land Battle 2000. A Special Study Group will begin, in April 1984, an evaluation of the concepts of further block modifications of the M1E1 and a Future Armored Combat System (FACS).

Senator **Goldwater**. What is the status of the issue of establishing a second source for the M1 tank engine?

General **Merryman**. The Army will complete its study soon and forward to OSD for evaluation. I anticipate them forwarding it to the Congress on or about 20 March.

BRADLEY FIGHTING VEHICLE

Senator **Goldwater**. Why are you proposing to increase the production rate for the Bradley from 600 in fiscal year 1984 to 710 in fiscal year 1985?

General **Merryman**. The current approved program provides for the procurement of 900 Bradleys in the years FY86–FY89. The 710 vehicles requested in fiscal year 1985 is the quantity of vehicles that provides a smooth increase in production to reach the higher and more economical production level.

Senator **Goldwater**. If the Bradley production rate was stabilized at 600 for fiscal year 1985, how much could your fiscal year 1985 budget be reduced?

General **Merryman**. $124.4 million (WTCV).

PATRIOT

Senator **Goldwater**. It sounds from your testimony that Patriot has slipped about a year, is that accurate?

General **Merryman**. Deployment of the first tactical Patriot unit to Europe has slipped approximately eight months, April 1984 to December 1984. This slip is the result of the Army placing the program on a milestone oriented schedule to fix shortfalls discovered in testing in fiscal year 1983 and to prove through additional tests that the system is ready to be fielded.

Senator **Goldwater**. What would be the impact of slipping the funding for the Patriot for a year—give the system a year to solve the problems and then resume funding in fiscal year 1986, assuming all the problems can be worked out?

General **Merryman**. The fiscal year 1985 production contract should not be deleted for the following reasons:

a. It is planned to recover to contract schedule during the fiscal year 1984 buy for the Production Sets, and in the fiscal year 1983 buy for the Missile Rounds. Deletion of fiscal year 1985 buy would create a substantial delivery gap of more than one year.

b. Business base for existing contracts (fiscal years 1982, 1983 and 1984) would be impacted. The support labor pool (900 to 1,000 engineers) cost would be increased against the existing contracts. Fiscal year 1984 production buy negotiation will be jeopardized.

c. A substantial loss in the vendor base would occur in a production break. Substantial source selection and vendor qualification costs would occur. Virtually all vendors (approx 1,800 vendors) would have to be requalified, as specified in the Patriot Product Assurance Plan, because of a production break. Skilled production personnel would be lost to all primary and secondary facilities.

d. Deployment would be substantially impacted. Deployment of Patriot Battalions six thru nine to Germany will be delayed 16 to 20 months.

e. Program cost would be significantly increased. This increase would be in the magnitude of $400 million to $500 million.

f. The International Program will be impacted due to a break in production buys. Specifically, this reduction could jeopardize the existing agreements with the Netherlands and Germany with procurement beginning in fiscal years 1984/1985 time frame. This action would send a negative signal to all U.S. allies and would cause a delay in scheduled deliveries and an increase in unit cost to those nations currently planning to begin acquisition in fiscal year 1984/1985 time frame.

Senator **Goldwater**. What is the contractor's liability to correct these problems—is the contractor paying or is the Army paying?

General **Merryman**. For items delivered under fiscal year 1980 and fiscal year 1981 production contracts the contractor's liability to correct these problems is under the Inspection of Supplies and Correction of Defects Clause. The clause is contained in the Defense Acquisition Regulation (DAR) 7-203,5(a) and (b). Repair and corrections for fiscal year 1980 production items are being made with Government sharing 75% and contractor sharing 25%. The fiscal year 1981 production items are made based on 85/15 arrangement for overrun not more than $16 million and 75/25 arrangement for more than $16 million to minimum fee. Items not delivered under fiscal year 1982 and fiscal year 1983 contracts are being corrected in the production line. The shareline and clauses covered under these contracts indicates the percentage of the contractor's potential profit that is lost when he must pay.

Senator **Goldwater**. Last year, 200 million was appropriated to the Air Force for NATO Air Base Defense. How much of that funding will be spent on Patriot?

General **Merryman**. Several options are under consideration for spending the $200 million for NATO Airbase Defense. Some of these options include spending a portion of the $200 million to procure Patriot systems for the German Air Force as outlined in the December 1983 Air Defense Agreement signed by Secretary Weinberger and Minister Woerner.

Senator **Goldwater**. We have just entered into a cooperative agreement with the Germans for them to buy and man some Patriots. Can you expand on this agreement?

General **Merryman**. The cooperative agreement with the Germans was signed by the Secretary of Defense and the German Minister of Defense on 6 December 1983. We will provide Germany a total of 12 tactical plus 2 training/operational float Patriot fire units from U.S. stocks in exchange for Germany providing and manning 27 Roland fire units for defense of 2 U.S. main operating bases and one forward operating location in Germany. In addition, the German Air Force will man 12 U.S. Patriot fire units in the southern sector of Germany for ten years. The German Air Force will procure an additional 12 tactical plus 2 training/operational Float Patriots in a conventional Foreign Military Sales agreement.

Senator **Goldwater**. Please explain recent international agreements as they pertain to the Patriot Air Defense System.

General Merryman. In addition to the German Patriot/Roland agreement, previously mentioned, the Netherlands Air Force signed a Foreign Military Sales case with the U.S. Army in February 1984. This case includes procurement of 4 Patriot Fire Units for the Netherlands Air ~~Force~~ starting in 1984. These Patriot units will replace the Netherlands Nike Hercules units which are deployed in northern Germany as a part of the NATO integrated air defense force.

DIVISION AIR DEFENSE (DIVAD) GUN

Senator Goldwater. General Merryman, I have been impressed with the capability of the DIVAD. As you know, I went down to Fort Bliss last summer and fired one of the prototypes. According to your testimony, there are problems with acceptance testing. How would you characterize these problems?

General Merryman. Problems experienced during acceptance testing of the first production fire unit are characterized as typical of the first article check-out of any major weapon system. Problems encountered were basically hardware integration and software. Corrections to all the hardware problems have been made and incorporated into the production line. Final software changes are being made in the multipath function of the radar.

Senator Goldwater. Last year we authorized 130 DIVADs. Under the current contract the Army can execute the third and final option to build these 130 DIVADS in May 1984. I understand you may slip that May 1984 date, please explain.

General Merryman. Originally, award of the Option III (fiscal year 1984) contract was planned for May 1984. However, the Army has notified Ford Aerospace that the contract award period would be extended because of the slip in delivery of the first fire unit. The contract allows a no cost day for day slip in ward of Option III for every day the delivery of the first fire unit is slipped. A fiscal year 1984 contract award date has not been established.

Senator Goldwater. Last year we also required a full report from the Secretary of the Army on DIVAD system performance 30 days before executing the third contract option. Where do you stand on that report?

General Merryman. The report, to be submitted 30 days prior to award of the fiscal year 1984 contract option, is to contain the results of initial production testing that are available at that time and the Secretary of the Army's assessment as to whether or not the DIVAD system will ultimately meet the requirements specified in the contract with regard to performance, realiability and maintainability. That report is being prepared and will be submitted thirty days or more prior to award of the fiscal year 1984 option.

Senator Goldwater. Given all these events affecting DIVAD, can the fiscal year 1985 budget request be reduced?

General Merryman. The contractor has developed and presented to the Army a new delivery schedule that shows recovery to within one month of the original schedule by the end of the fiscal year 1983 funded delivery period and full recovery to the original schedule by the end of the fiscal year 1984 funded delivery period. Based on this schedule, full funding in fiscal year 1985 would be required to continue the program as structured and continue production at the most economical rate. The Army is currently evaluating that proposed schedule.

INFANTRY ANTIARMOR WEAPON

Senator Goldwater. General Merryman, it appears to me that you would be giving high priority to developing and fielding a light anti-armor weapon that the infantryman can use against tanks and other armor. What do you have today and where are you putting your emphasis for the future?

General Merryman. This past year the Army and Marine Corps completed the congressionally directed Lightweight Antiarmor weapons (LAW) test and evaluation. None of the weapons tested can kill the modern tank by penetrating it from the front. Both services agreed that because of its multipurpose role as a cheap, highly proliferated source of firepower, the basic M72 series LAW should be kept in the inventory, while we look at modest improvements. We are also testing the Swedish AT-4 to qualify if for soldier use. Because LAW is incapable of defeating the thick armor on the front of modern threat tanks, it will no longer be considered an antitank system. However, we still require a lightweight, low-cost, multipurpose weapon to defeat a variety of targets such as BMPs, other lightly armored vehicles, and fortified positions.

The medium and heavy antitank missiles continue to be our primary tank killing systems. Our medium range antitank weapon, the Dragon, has a number of limitations. The gunner is [deleted]. The Army is initiating a progam in fiscal year 1985 to replace Dragon. Known as the Advanced Antiarmor Weapon System (AAWS), it will be manportable (35 pounds or less), have greater lethality, range, and accuracy than Dragon. Because of its increased capability and principally because of its light weight, the AAWS will be a primary antitank weapon in the light infantry divisions, and will play a key role in the heavy force, as well.

Senator GOLDWATER. General Merryman, I understand you are upgrading the Dragon; just what are you trying to accomplish with this upgrade?

General MERRYMAN. We do not have a program to upgrade or product improve the Dragon. Dragon is no longer being produced. The last procurement was in 1978 and last deliveries were received in 1980.

Senator GOLDWATER. General Merryman, I'm told that there is the potential to put a new warhead on the Dragon—for about $1000 per round—that will enable the Dragon to kill most existing armor threats. Are you pursuing that option; what would it cost?

General MERRYMAN. Last year, the Army considered a program to product improve the Dragon warhead. Because of advancements in opposing armor technology and antiarmor countermeasures and Dragon's inherent man-machine interface problems, we decided to develop a new generation medium antitank missile to overcome the Dragon's limitations. The estimated cost to design, build and retrofit (X 40,000 Rds) the Dragon missile to defeat the T-72 is seventy (70) million dollars. It should be kept in mind that this improvement will not defeat [deleted].

LIGHT DIVISION IMPACT ON R&D PROCUREMENT PROGRAMS

Senator GOLDWATER. What impact does the Army's initiative to establish a couple of Light Divisions have on your R&D and procurement programs?

General MERRYMAN. The Army's Light Division equipment initiatives primarily focus on current R&D and procurement programs. The Light Divisions' equipment requirements are being met, essentially, through standard items, common throughout the Army. Resource requirements associated with Light Divisions that are included in the President's budget request include such items as night vision goggles and sights, small arms, tactical trucks, TOWs, engineer and fire direction equipment. Light Division initiatives should be seen as doing more with what we have, rather than asking to do more with more resources. Decisions to be made with respect to procurement for Light Divisions will primarily be ones of distribution.

Senator GOLDWATER. Please provide details for the record on the "Army of Excellence" proposals for force structure changes and explain how the new light division fits into that overall proposal.

Dr. SCULLEY. The Army of Excellence (AOE) is a proposed force design. Primary consideration in validating all of the changes proposed by the AOE will be affordability and executability. To date, many of the AOG design proposals have not reached the programing stage and are undergoing intensive analysis. The Army light division initiative is included in the AOE but is not inextricably tied to the validation of AOE. The Army views the implementation of its light division initiatives as essential to meeting the strategic imperatives of low intensity conflict in the near-term. AOE is based upon requirements for high intensity conflict in the midterm. As AOE requirements are validated by the Army Staff they will appear in subsequent budget submissions.

Senator GOLDWATER. Does this initiative have an impact on the Army's overall airlift requirement? Can we cut back on our plans to buy C-5s or C-17s?

Dr. SCULLEY. The Army's requirement for airlift falls into two categories—intertheater and intratheater. In the realm of intertheater requirements, the current airlift capability can satisfy only about one half of our requirements. Even with all of the enhancements currently programed, we will still have a 22 percent intertheater shortfall. The majority of augmenting units to be lifted in this category will continue to be heavy forces with outsized requirements. The C-17 is critical to overcoming the last 22 percent of our intertheater shortfall as well as in meeting the substantial intratheater (forward, austere) airlift needs. The current aging mix of airlifters cannot meet the intertheater/intratheater requirement and the C-17 can.

THE 9TH MOTORIZED DIVISION

Senator GOLDWATER. For several years we've heard about the "High Tech Light Division"—the 9th at Fort Lewis. Are you abandoning your efforts with the 9th Division to develop a prototype light division?

Dr. SCULLEY. The High Technology Motorized Division (HTMD) will continue to be a test bed for evaluating emerging technologies and new operational, organizational, and equipment concepts applicable to the new light divisions, airborne, air assault, and heavy divisions, both active and reserve. The 9th Infantry Division's current organization will be streamlined down to approximately 14,500 spaces with a goal of eventually reducing to a final design strength of about 13,000. It will continue to be focused on Southeast Asia and will be operational in FY 86. As new concepts and equipment are proven by the 9th ID, they will be examined for applicability to the new light infantry division, heavy divisions, and to the Army as a whole.

Senator **Goldwater**. As I understand it, the 9th Division will become a one-of-a-kind "motorized" division. What justification is there for keeping one "motorized" division in the Army force structure?

Dr. **Sculley**. The High Technology Motorized Division (HTMD) is oriented on mid-intensity conflict theaters, open terrain, and a heavily armored threat. It has a significant tactical mobility differential over other infantry divisions. The HTMD provides a lethal anti-armor capability which is less costly, and because it is significantly lighter, more deployable than an armored or mechanized division. Initiatives validated by the HTMD are being incorporated in Army-wide designs. The Army continues to need this capability because it has proven to be an effective test bed for evaluating emerging technologies that increase capabilities or reduce manpower.

9MM PISTOL

Senator **Goldwater**. I see that your budget has the 9mm pistol in again. What's new since we turned you down last year?

General **Merryman**. The Congress in PL 97-114 appropriated FY82 resources to test, evaluate, and select a commercially available 9mm handgun suitable for military use. The testing of candidate handguns began on February 1, 1984 and the Army, as executive service, will be prepared to award a contract in December 1984 for those services who have funds. FY84 resources were made available by the Congress for procurement of the selected handgun to satisfy Air Force and Navy requirements. The Army as well as the Air Force and Marine Corps have requested funds for FY85 procurement.

AH-1S COBRA

Senator **Goldwater**. Exactly what are the Army plans to upgrade the Cobra? What capabilities will be added.

General **Merryman**. The Army has three programs to upgrade the Cobra. The first program is the Cobra Fleet Life Extension (C-FLEX) Program which is designed to keep the Cobra flying safety until it is taken out of service. C-FLEX will add blue-green cockpit lighting for compatability with the new family of night vision goggles and seven other improvements: TOW missile system component upgrade, main rotor improvements, TOW test set upgrade, radio upgrade, new flexible main drive shaft, and TOW missile provision (wiring and structural modifications) for 87 AH-1G helicopters, as well as overhauling 41 AH-1S (modified) Cobras. The second program is the Cobra Night (C-Nite) Program designed to give the Cobra a night target detection and weapons firing capability. The third program is the Cobra Minuteman Program designed to convert 29 AH-1G helicopters to the tank killing AH-1S (Modified) configurations which has the TOW missile system, and improved engine, transmission drive train.

Senator **Goldwater**. How many aircraft will be modified?

General **Merryman**. The following figures are planning figures and may vary due to aircraft attrition. The C-FLEX program will involve modification to 988 Cobras. The current C-nite program will modify 500 Cobras. The Minuteman program will modify 29 AH-1G helicopters to the AH-1S (modified) configuration.

Senator **Goldwater**. What are the costs of these programs?

General **Merryman**. The C-FLEX program will cost $201.2 million, $45.8 million for Cobra Minuteman, and $237.1 million for C-nite.

Senator **Goldwater**. How many of these modified Cobras will be assigned to Guard or Reserve Units?

General **Merryman**. We currently plan to assign all 87 AH-1G helicopters which we will modify to the Army National Guard.

UH-60

Senator **Goldwater**. What can you tell us about reliability and maintainability of the UH-60 during this operation?

General **Kenyon**. [Deleted.] Maintenance man-hours per flying hour (MMH/FH) were 2.0 to 2.6 MMH/FH as compared to the design criteria of 3.8 MMH/FH.

Senator **Goldwater**. What has been the accident rate of the UH-60? How does that compare with the accident rate of the UH-1?

General **Kenyon**. The UH-60 has been and is being flown in an intensive training environment which includes night operations, night vision goggle operations, night formation flight, and nap-of-the-earth flight. The Black Hawk is fielded to front line and medivac units involved in extensive tactical training. The Black Hawk is the principal aircraft used in field training and deployment exercises. Additionally, the Black Hawk is being flown more hours per month per aircraft than any helicopter in the Army inventory. Consequently, this constant exposure to high risk, intensive training scenarios increases the Black Hawk accident exposure.

The following displays a comparison of the UH-1 and Black Hawk accident rates per 100,000 flying hours. In comparing the data, consideration must be given to the fact that the UH-1 fleet is not being exposed to the same level of intensive, high risk training scenarios as the Black Hawk because of the UH-1's lesser capabilities.

ACCIDENT RATE PER 100,000 FLYING HOURS

	UH-1	UH-60
Fiscal years:		
1982	2.95	5.88
1983	1.06	4.81
1984 (October to December)	1.86	10.57

LHX

Senator **Goldwater**. What would be the effect on Army Aviation if the LHX start up were delayed a year or more?

General **Kenyon**. If the LHX were delayed 1 year it would delay the replacement of 20 plus year old obsolete and tactically deficient aircraft. It would disrupt the initial LHX system design and concept validation effort begun as a cooperative effort with industry in fiscal year 1984.

Senator **Goldwater**. What is the Army's development plan for the LHX? How will you insure vigorous competition in the program?

General **Kenyon**. The Army plans to pursue the critical LHX design and concept validation work in fiscal year 1984 and fiscal year 1985. Assuming this validation indicates we should proceed, then beginning in fiscal year 1986, the Army plans to initiate a competitive LHX engineering development program between two manufacturers leading to a total system flyoff. The winning competitor will be required to qualify a second source for production to ensure that we have continuing competitive base for the LHX systems.

CH-47 HELICOPTERS

Senator **Goldwater**. General Merryman, some questions have been raised over the decision to purchase from the Italians 11 CH-47C helicopters that were being build for the Iranians. How much will these 11 aircraft cost?

General **Merryman**. It is anticpated that the cost for the 11 aircraft can be negotiated for $110 million for the procurement and any essential configuration changes.

Senator **Goldwater**. Is the money coming out of the Army's budget?

General **Merryman**. Yes, the budget includes the $110 million to purchase and modify these 11 aircraft to the Army's CH-47C configuration.

Senator **Goldwater**. How much will it cost to modify these aircraft to the "D" configuration?

General **Merryman**. It is anticipated the conversion cost will be comparable to the $4.666 million in fiscal year 1984 dollars of the Army's CH-47C. This assumes the conversion to fiberglass blades and the T55-L-712 engine estimated at $1.2 million in fiscal year 1984 dollars will be accomplished during the normal service life of the aircraft. As these are new aircraft, it is not planned to modify them until the end of the current conversion program.

Senator **Goldwater**. How does this purchase fit with the Army's planned conversion schedule for the CH-47's? Does this mean we can fund fewer mods when these 11 are being modified?

General **Merryman**. These aircraft will be added to the end of the current conversion schedule and will not impact on planned conversions. Funding for the conversion of these 11 aircraft would have to be provided in addition to the current conversion program funding. It will get us 11 aircraft closer to our requirement and allow us to fill current shortfalls at an affordable price.

Senator **Goldwater**. What would be the consequences of not buying these aircraft?

General **Merryman**. The Government of Italy contends that the contract with Iran is still binding, but has been honoring the United States trade embargo. The Government of Iran has threatened international court action unless the helicopters are delivered. Italy has stated an intent to deliver them to Iran if another customer cannot be found.

ARMY REMOTELY PILOTED VEHICLE PROGRAM (RPV)

Senator **Goldwater**. What is the total cost of the Aquila program?

General **Merryman**. Total costs are (then year $ in millions):

Development[1]	1,019.4
Procurement[2]	1,371.9
Construction	18.7
Total acquisition	2,410.0

[1] Includes basic program (436.2) night vision payload (98.5), MICNS data link (86.3), RPV advanced developments (121.4), and RPV future missions (277.0).

[2] Includes spares (155.1) and government furnished equipment (56.4).

Senator **Goldwater**. How many sets will be procured? How many air vehicles are included?

General **Merryman**. Sixteen (16) division sets (batteries) are being procured. A battery set consists of: 13 Air Vehicles; 5 Ground Control Stations; 2 Launch Subsystems; 2 Recovery Subsystems; 5 Ground Data Terminals; 1 Maintenance Shelter; 548 air vehicles are included in the procurement buy.

Senator **Goldwater**. Critics of the Aquila say the system will be bogged down by an excessive logistical tail. How many vehicles will be required to support each RPV?

General **Merryman**. Mathematically, we are procuring 548 air vehicles and 258 components that require trucks or .47 trucks per air vehicle. To launch, control, and recover one air vehicle requires four (4) vehicles.

Senator **Goldwater**. Is the Army also evaluating any of the low cost RPV's—such as the Israeli Mastiff or the US made Sky Eye? If not, why not?

General **Merryman**. Yes, the Army has evaluated those RPVs and others. Army assessment is that they do not meet Army requirements in terms of target location accuracy, jam proof data link, laser designation, all weather capability, logistics support, maintainability, and tactical hardening.

Questions Submitted by Senator Edward M. Kennedy

ARMY COMMUNICATIONS

Senator **Kennedy**. What is the status of the Army's effort on the AN/TTC-39 Alpha Circuit Switch?

Dr. **Sculley**. The Army is ready to award a contract for the AN/TTC-39 Alpha using funds appropriated in FY84 as soon as it receives reauthorization approval from the House and Senate Armed Services Committees. Approval was requested in my 23 February 1984 letter.

SMALL BUSINESS

Senator **Kennedy**. What percentage of Army procurement goes to small business? What percentage of spares reprocurement is broken out to contractors other than the initial prime contractor? What efforts is the Army making to increase small business participation? Has the Army undertaken any efforts to review restrictive procurement codes, inadequate data packages, etc. to promote competition?

General **Merryman**. The Department of the Army fully supports the objective of the spare parts breakout program and the small business program. During FY 83, 24.5% of all dollars awarded was made to small business firms. Our acquisition strategies continue to emphasize competition whenever it is feasible. During November 1983 the Spare Parts Review Initiative Program (SPRINT) was established to place additional emphasis on the process by which we review proposed acquisition.

Under this program we have established competition advocates who challenge planned sole source acquisition. Breakout management offices have been established at each of the DARCOM major subordinate commands and we are grouping requirements so that economic production lot contracts can be solicited. Each of these and other actions underway will assist the Army in improving our past experiences in spare parts breakout and competition.

OPERATIONAL TEST AND EVALUATION (OTEA)

Senator **KENNEDY**. Last year the Congress established a new position of Director of OT&E. Please describe the efforts of the Army to integrate its operational testing with the new office.

General **MERRYMAN**. The Office of the Director of Operational Test and Evaluation created by Congress within the Office of the Secretary of Defense is presently organizing those administration actions necessary to the establishment of any new agency. The Army has assisted that process by providing recommendations on a proposed directive which defines the operating functions, responsibilities, and authorities of the new office. The Army has also provided the Director of Operational Test and Evaluation its first Annual Report of Operational Test and Evaluation, as required by PL 98-94. When a permanent Director is appointed, new operating relationships and procedures will undoubtedly be further defined. The Army will play a role in this definition and continue to maintain the integrity of its operational testing activities and organizations.

Senator **KENNEDY**. What Army systems underwent operational testing last year? What were the results?

General **MERRYMAN**. Last year the Army completed operational testing of 46 systems which were categorized as shown below:

Army Operational Testing, Fiscal Year 1983

Category	*Number*
Major	6
Automatic message switching central	
Circuit switch	
Patriot	
Sgt York	
Pershing II	
Defense satellite communication system	
Designated programs: Single channel ground air radio system (SINCGARS)	1
Nonmajor cat 1	5
Tactical communication jamming system	
Single subscriber terminal	
Advanced narrow band digital voice terminal	
Securer digital net radio interface unit	
Light armored vehicle	
Nonmajor other	34
Total	46

Results of each system test will be reported in individual evaluation reports which can be made available to Congress. A discussion of the spectrum of Army's operational testing activities for FY 83 is currently available in the first annual DOD Operational Test and Evaluation Report which has been submitted to Congress.

WARRANTIES

Senator **KENNEDY**. A number of Army Systems consist of off-the-shelf equipment, particularly in the areas of trucks, etc. What warranties does the Army obtain on off-the-shelf equipment?

General **MERRYMAN**. Basically, the Army receives the same type of warranty that the commercial/private sector would receive on standard off-the-shelf pieces of equipment. Examples are as follows:

Commercial Utility and Cargo Vehicle (CUCV) (Manufactured by General Motors Corporation: 12 month/12,000 miles on vehicle; 24 month/24,000 miles on powertrain; 10 month storage allowance; bill back parts exchange and labor credit.

M915 Truck Tractor Manufactured by AM General: 15 month/12,000 miles.

M939-5 Ton Truck: (Transmissiion Product Improvement Program) Manufactured by Allison: 12 month/12,000 miles.

SOLE SOURCE

Senator **Kennedy**. What percentage of fiscal year 1985 contracts will be sole source? How does that compare with previous years?

General **Merryman**. It is difficult at this time to project precisely what percentage of Army's fiscal year 1985 contracts will be noncompetitive. From fiscal year 1981 through fiscal year 1983 Army consistently reduced the percentage of noncompetitive awards from 61 percent to 58.5 percent. The goal for fiscal year 1984 is to reduce this percentage to 56.7 percent. If the favorable trend continues through fiscal year 1984 and fiscal year 1985 the percentage of competitive awards could be expected to be less than 56 percent in fiscal year 1985.

MULTIYEAR PROCUREMENT

Senator **Kennedy**. In your report you identify several multiyear procurement proposals, including the Blackhawk airframe, Bradley Fighting Vehicle turret drive and others. With respect to each of the systems, please describe how they rank on each of the congressionally mandated criteria for multiyear procurement, namely: projected savings; degree of cost confidence; quantity stability; funding stability; design stability.

General **Merryman**. Projected savings for our fiscal year 1985 multiyear candidates are as follows:

[Dollars in millions]

Program	*Savings*
CH-47D	153.4
TOW II	117.7
UH/EH 60 airframe	126.3
Shop equipment	74.3
5-ton truck	65.5
Bushmaster 25mm gun	12.0
BFVS turret drive	10.8

With regard to the balance of the criteria, all programs meet the mandated criteria and all are considered excellent multiyear candidates.

ACCEPTANCE SUSPENSION

Senator **Kennedy**. How many times in the last year has the Army suspended acceptance on procurement contracts?

General **Merryman**. Automated records are not kept by the Army regarding each instance of suspended acceptance. However, the US Army DARCOM surveyed their major subordinate command purchasing offices. The survey revealed approximately 450 instances during FY83 and FY84 where acceptance was suspended on Army contracts either by the Army itself or a DLA, Navy, or Air Force contract administration service activity administering an Army contract.

Senator **Kennedy**. For what system?

General **Merryman**. Sixty-six examples of acceptance suspension follow involving numerious weapons systems and items.

Senator **Kennedy**. In each case what was the rationale for suspending acceptance?

General **Merryman**. Generally, acceptance is suspended whenever the contractor fails to meet the contractural quality/technical requirements and the deficiency would or could affect one or more of the following major areas: performance, durability, reliability, interchangeability, effective use or operations, weight or appearance (where a factor), or health or safety. Examples of the methods used to stop acceptance include: (1) The government contract administration service activity stops acceptance in the plant when a major deficiency is found. (2) The contractor fails initial production test or first article test and cannot enter production until corrective action and retest is acceptable. (3) The contractor fails lot by lot acceptance testing (e.g., ballistic acceptance tests, fly-to-buy tests, etc.) and lots are rejected until corrective action and retest is acceptable.

Senator **Kennedy**. What is the current status of those contracts?

General **Merryman**. The current status of each of the 66 examples follows:

EXAMPLES OF ACCEPTANCE SUSPENSION ON ARMY CONTRACTS, FISCAL YEAR 1983 AND FISCAL YEAR 1984

Contractor	System/item	Rationale	Current status
1. Aerojet Ordnance	M74 and M75 mines	Poor soldering/failure to meet technical reqts.	Now in compliance but behind schedule.
2. J. Cunningham	Lance missile parts	Failed first article test	Contract terminated.
3. Martin Marietta	Copperhead	Unqualified parts used in up rounds	Qualified parts now being used. Contractor now in production.
4. Honeywell	M74 mines/sensor trip line	Failed first article test	Corrective action taken. First aritcle retested and passed. Now in production.
5. BEI Electronics, Inc	M439 rocket fuze	do	Corrective action and resubmittal of first article in process.
6. Aerojet Ordnance	M75 AT HE mine/electronics MCD assembly	do	Corrective action taken. First article retested and passed. Now in production.
7. Aerojet Ordnance	M74 AT HE mine/body assembly	do	Corrective action and resubmittal of first article in process.
8. Lockheed Electronics	M75 AT HE mine/electronics MCD assembly	do	Corrective action taken. First article retested and passed. Now in production.
9. Colt Industries	M231 firing port weapon	do	Do.
10. Aerojet Ordnance	BLU/91 AT mine gator/S and A assembly	do	Corrective action and resubmittal of first article in process.
11. KDI Precision Products, Inc	M143 Patriot/S and A device	do	Corrective action taken. First article retested and passed. Now in production.
12. KDI Precision Products, Inc	M143 Patriot/logic circuit hybrid for S and A device	do	Do.
13. Remington Arms	M855 SAWS ball ammunition	do	Corrective action and resubmittal of first article in process.
14. Fabrique Nationele	M27 link for M856 SWAS tack out	do	Corrective action taken. First article retested and passed. Now in production.
15. Honeywell	30mm HEDP ammunition	do	Corrective action and resubmittal of first article in-process.
16. Singer	M1 tank servo-torque	Failed control test	Defective items being held at Detroit Arsenal tank plant. Corrective action will be initiated.
17. KDI Precision Products, Inc	2.75 inch rocket system/M123 and M127 fuzes	Slow arming times at −65 degrees fahrenheit	Corrective action accomplished. Now in production.
18. Galion Amco	M51A1 projectile, 20mm, HPT	Dimensional defects. Excess paint on rotating band	Corrective action accomplished. Contract completed.
19. Space Ordnance Systems	M206 infared flare	Flare failed functional reqts, i.e., ejection, velocity of ejection, intensity, and burning time.	First article test passed on fourth submission. Now in production.
20. Harley Davidson York	MK82–1 bomb body	Dimensional defects	Corrective action accomplished. Now in production.
21. Harley Davidson York	BDU–45/B practice bomb	do	Do.
22. Action Mfg. Co	M781 40 mm practice cartridge	do	Corrective action accomplished. Contract completed.
23. Accudyne Corp	M732 proximity fuze for artillery ammunition	Fuze functional "off time" in ballistic test	Corrective action accomplished. Now in production.
24. Martin Electronics	MK 3–0 container for MK 1B–0 marine signal	Sealing gaskets not coated properly; lot number missing.	Do.
25. Amron Corp	Projectile, M56A4, 20 mm HE 1 cartridge	Dimensional defects	Do.
26. Aerojet Tactical Systems	Beaker for 5 inch/54 projectile, MK821	do	Corrective action accomplished. Contract completed.
27. Norris Industries	MK 82–0 5 inch/54 projectile body	Hardness requirements were not met	Corrective action accomplished. Now in production.

28. Action Mfg. Co	MK 19–0 personnel distress signal	Dimensional defects; functional failures; marking defects.	Corrective action accomplished. First article resubmitted and passed. Production completed. Contract completed.
29. Genii Research	.45 cal. pistol barrels	Wrong ammunition used for testing	Contract terminated.
30. Colt Industries	Rear sight; M16A2 rifle	Failed first article test	Corrective action accomplished. First article resubmitted and passed. Now in production.
31. Colt Industries	M16A2, 5.56 mm rifle	......do	Do.
32. Consolidated Diesel Mobile Equipment Div. (CONDEC) Corp.	M198 howitzer equilibrator bracket	Defective castings	Corrective action accomplished. Now in production.
33. Hughes Helicopters	M242 chain gun	First article test rejected	Corrective action and resubmittal of first article in-process.
34. General Reliance Corporation	Cable assembly on M60A3 tank	Contractor cannot perform "EMI" production test	Production still suspended.
35. Mine Safety Appliances	M20 breathing apparatus	Contractor failed to perform first article test on Lot D. O. 0025.	Contractor will submit request for waiver and suggest using test date from another lot for the same item which passed first article test.
36. Brunswick	M273 maintenance kit	Nonconforming items	Corrective action in-process. Items will be resubmitted for acceptance.
37. Mine Safety Appliance	Face blank, SM mold #37	Incomplete test report	Test report was completed and resubmitted. Test report being reviewed.
38. Hughes Helicopter	OH–6 helicopter parts	Nonconforming parts	Contractor now producing conforming parts.
39. Magnavox	AN/PSG–2	Group C testing failures	Corrective action accomplished. Group C testing passed. Contract completed.
40. Norden	AN/GYK–29 BCS	Group C testing failures/marking defects	Corrective action accomplished. Group C testing passed. Now in production.
41. E–Systems, Memcore Div	RT 524/VRC and R 442/VRC	Failed group C testing	Corrective action accomplished. Group C testing passed. Contract completed.
42. Fairchild Weston	AN/TLQ–17A	Inconsistent test correlations	Corrective action accomplished. Contract completed.
43. Sun Chemical Corp., Kollsman Instruments Div.	AN/TAS–4	Nonconforming product caused poor delivery schedule performance.	Show cause letter issued. Contractor corrective action accomplished. Contractor now exceeding delivery schedule requirements.
44. Hughes Aircraft	G/VLLD; laser designator range finder	Failed First article test	Corrective action taken. First article retested and passed. Production resumed in August 1983 but still behind schedule.
45. Martin Marietta	Hellfire/laser seeker	......do	Corrective action taken. First article retested and passed. Production now underway.
46. Rockwell International	Hellfire/missile auto pilot electronics assembly	......do	Corrective action taken. First article retested and passed. Production now underway.
47. Rockwell International	Hellfire/launcher circuit card assembly	......do	Do.
48. Hughes Aircraft	TOW/TOW 2 missiles	Failed fly-to-buy test	Corrective action taken. Fly-to-buy tests passed. Still in production.
49. General Dynamics	VIPER missile system	Failed initial production test. Excessive cost/reliability/safety problems.	Contract terminated.

EXAMPLES OF ACCEPTANCE SUSPENSION ON ARMY CONTRACTS, FISCAL YEAR 1983 AND FISCAL YEAR 1984—Continued

Contractor	System/item	Rationale	Current status
50. Hughes Aircraft	ROLAND/track radar	Nonconformance with technical requirements. Test failures. Reliability problems.	Hughes developed new confidence test (stringent burn-in) and mean time between failure has improved. Problems are being resolved and confidence test will continue.
51. Hughes Aircraft and Boeing	ROLAND missile system	Failed initial development readiness verification test (DRVT). Contractual reliability requirements not met.	Contractors reworked 546 missiles. DRVT 2 now being conducted.
52. Norden Industries	Multiple launch rocket system	Five major defects were being dispositioned locally by Norden as minor defects without Army concurrence.	Corrective action regarding the defects and disposition procedures accomplished. Contract is still active and deliveries are now on schedule.
53. Rockwell International	Hellfire/launcher and missile circuit card assembly	Use of unauthorized soldering flux	First production deliveries are on hold.
54. KDI Precision Products, Inc. Subcontractor: Timex.	XM445 fuze for multiple launch rocket system	Defective integrated circuit	Lot LRP2–10 was rejected. Army and KDI qualified a new subcontractor for the integrated circuit. Contract was completed.
55. Pheurer	MA72A1 and MA72A2 semi-trailers—34-ton	Improper paint application. Unsafe plant conditions	Corrective action taken. Production and acceptance now underway.
56. Hughes Aircraft	Integrated sight unit for Bradley fighting vehicle system.	Computerized test station failures in plant	Corrective action taken. Production now underway.
57. General Motors	Commercial utility cargo vehicle	Unresolved issues relating to mechanical retrofits and body water leakage.	Acceptance resumed. Contractor production rate reduced with 100 percent inspection.
58. AM General Subcontractor: Rockwell	M939 series 5-ton truck	Rockwell-manufactured carrier assemblies failed monthly control test.	Vehicles with suspect carrier assemblies not being accepted pending completion of failure analysis.
59. AM General Subcontractor: Rockwell	do	T-case manufactured by Rockwell failed during initial production test. Reliability failures.	Corrective action accomplished. Initial production test passed. Acceptance of vehicles resumed.
60. General Dynamics Land Systems Div.	M60A3 tank	Weld cracks in tank hulls (in ballistic seams and around front tow lugs and tow pintles).	No vehicles accepted in February and March 1984. Corrective action plan being developed. Vehicle acceptance remains suspended pending corrective action.
61. Detroit Diesel Allison Div. (GM)	XT1410-4 transmission for M88A1 vehicles	Transmissions bought as spares fro M88A1 perform erratically in reverse.	Contractor is performing detailed parts inspection. When fault is isolated, contractor will repair defects at own expense. Acceptance will resume after corrective action and repairs.
62. AVCO-Lycoming	AGT-1500 engine for M1 tank	Unacceptable test documentation in maintenance operations for repaired engines.	Corrective action accomplished. Acceptance has resumed.
63. Detroit Diesel Allison Div. (GM)	X1100-3B transmission for M1 tank	Contractor using wrong final inspection record	Do.
64. Benalco Corp	Cylinder heads for M151 one-quarter ton truck	Defective cylinder heads rejected lot-by-lot. They were unusable.	Contractor unable/unwilling to correct/replace defective cylinder heads. Contract will be terminated. Contractor going bankrupt.

65. J. I. Case	W24C scoop loader	Technical data missing	60 vehicles were accepted in place; 300 vehicles have been completed but not accepted. Total quantity on contract is 1,100.
66. Fairchild Camera and Instrument Corp., Linear Division.	MIL-M-38510 microcircuits for over 60 weapons systems involving over 10 prime contractors with Army, Navy, Air Force, and DLA contracts.	Burn-in testing was not properly performed in accordance with the specification requirements.	Services/DLA and prime contractors are returning suspect parts in inventory stock to Fairchild for reburn-in and/or final electrical rescreen. Prime contractors with suspect parts in equipment will submit requests for waiver to purchasing offices/program managers. Purchasing offices/program managers will not require suspect parts to be removed from board assemblies due to potential damage except where critical application determines that rescreening is required for a particular part type. Fairchild is under investigation for fraud by the Defense Criminal Investigative Service.

READINESS

Senator **Kennedy**. In the Washington Post yesterday, there was a report that today there are 25 percent fewer Army units certified as ready for combat than there were in 1980. This is said to be true despite the expenditure of $632 billion for defense over the last 3 years.

Do you have any comment on this report?

General **Merryman**. The readiness of the Army consists of its ability to man, equip and train its forces and to mobilize, deploy and sustain them as require to accomplish assigned mission. I rely on the unit status report to provide only one measure of the overall readiness of our units. The unit status report provides the current status of units and yields C-Ratings which are indicative of resources fill of units at a point in time compared to their wartime requirement as expressed in unit authorization documents.

A comparison of Active and Reserve Component major combat units (a total of 65 divisions, brigades, and armored cavalry regiments), with a unit status less than C-3 for personnel, equipment on hand, equipment readiness, and training reasons is shown at Encl 1. [Deleted.]

That there is no significant improvement in overall unit status from fiscal year 1980 to fiscal year 1983 is based on the way unit status is measured and what is measures.

The resources areas of personnel and equipment measurements are based on the numbers available/amount on hand compared to wartime requirements expressed in unit authorization documents. The commander develops a training rating by subjectively estimating the time it will require his unit to become fully trained. The overall unit status C-rating is based on the unit status rating computed for personnel, equipment and training resource areas. Usually the overall unit status rating is not better than the lowest C-rating computed or assigned any one of the measured elements.

In Oct. 80, 32 units reported less than C-3 for personnel reasons. The number decreased over the period April 81 to Oct. 83 to 16 units. This represents a 50 percent decrease in the number of units reporting less than C-3 for personnel reasons and reflects positive returns on budgetary investments in the manning area in recent years. Since Oct. 80, there has been an increase in the number of AC units achieving authorized levels in the Military Occupational Speciality and Strength personnel areas. Noncommissioned Officer shortages have decreased significantly and it is projected that the shortages will be eliminated by the end of FY 84. Increases in the Individual Ready Reserve and Reserve Component Full Time Manning programs have also increased.

In Oct. 80, 26 major units were less than C-3 for equipment on hand reasons and the number increased to 41 over the period Apr. 81 to Oct. 83. The increase is due to the Army's extensive modernization program. During modernization transition, changes in a unit's authorization document increases wartime requirements before equipment is available for fielding. This occurs when modernized equipment with associated support items of equipment (ASIOE) are added to an organization, or when a unit is being reorganized to a more capable organization. Consequently, because unit status ratings are measured against documented wartime requirements, the ratings are degraded. In many cases unit readiness and capabilities have increased through the fielding of more capable equipment and organizations even though all equipment fielding has not caught up with with the document changes. The graph reflects documentation changes which are occurring during modernization transition, and does not show true readiness and capability of these major combat units.

The actual fielding of resources through budget increases have significantly improved force readiness and capabilities. Old and obsolete equipment are being replaced and other items such as the TOE and Dragron night sights provide an new capability where none existed previously. Other systems which are part of the force modernization programs include the UH-60 Blackhawk, the most advanced utility helicopter of the 80's; the M1 Tank and its companion Bradley fighting vehicles, which provide our combined arms teams the most powerful, mobile survivable combat vehicles possible; and the Multiple Launch Rocket System, the newest and most modern field artillery system. These are essential to our ability to fight and win on the modern battlefield now and in the future. [Deleted.] The unit status for equipment readiness includes equipment on hand shortfalls caused by document changes and is derived from a computation of mission capable equipment on hand compared to full wartime requirements.

[Deleted.]

This improved training status of the Army reflects initiatives taken and improvements made possible by budget increases since FY 80. Improvements in institutional training for the enlisted soldiers and officers, the Army flying hour program and installation range modernization programs have resulted in improved individual and unit proficiency through high quality training programs. The National Training Center offers a tactical training environment of advance target and simulation systems and specially trained opposing forces, where Active and Reserve Component units can conduct realistic, mission-oriented training, a critical aspect of a unit's readiness and capability. The overseas deployment training program provides excellent opportunities for the Reserve Components to train in their probable deployment area with the command under which they will fight.

Senator **KENNEDY**. Once again, the Army budget devotes a substantially greater share of the increased spending for investment accounts (procurement and research and development) than operations and maintenance. Procurement is up 22%, R&D by 15% while O&M increases by only 13%. What will be the impact of this allocation on maintenance backlogs? On Training? On the overall readiness of the Army.

General **MERRYMAN**. It must first of all be understood that readiness is the Army's first priority. The tendency all too often is to view readiness, modernization, force structure and sustainability as separate and distinct. In reality they are completely interrelated. In this regard, O&M funds are crucial to Army readiness. They enable us to support both our people and our equipment. O&M dollars not only pay for; supplies, maintenance, and training, they also allow local commanders some flexibility to make sound judgments on how best to apply funds to local problems, particularly as they affect training and the quality of life of our soldiers and families.

The FY85 budget is just beginning to make up for years of inadequate resources. The increases are designed to insure a balanced Army program in order that the capabilities of the Army can be aligned more closely with the demands of the national strategy.

The readiness of the Army is increased by our efforts to modernize, to better sustain and train our forces and to achieve an optimal force structure. The essential element is an effective balance among these initiatives.

Specifically, looking at training priorities and requirements the 13% increase in O&M provides sufficient funding to conduct the required training necessary to achieve desired readiness levels.

In regards to the impact of the O&M allocation on maintenance backlogs, the FY85 Army O&M appropriation, as included in the President's budget request, provides for total depot maintenance funding of $2.4 billion. This represents a total increase of $514 million over the depot maintenance funding of FY84. Despite this substantial funding increase, depot maintenance requirements have grown and all requirements are not fully funded. The unfinanced requirement for maintenance support activities decreases from $370 million in FY84, to $269 million in FY85. The decision to continue a manageable unfinanced requirement was made consciously by the Army in light of overall funding constraints. The Army accepts the potential short term risks in readiness this funding level provides, in order to achieve the long-term readiness benefits of modernization.

GROWING OPERATION AND MAINTENANCE COSTS

Senator **KENNEDY**. In your statement you state "We can improve the credibility of our conventional warfare deterrent by using high technology to . . . reduce manpower and cost [and] make Army systems easier to operate and maintain."

What additional five year operation and maintenance costs are associated with the new procurement contained in the FY85 budget? What will the operation and maintenance costs be in FY 1989 compared with this year?

General **MERRYMAN**. A direct comparison between years of operation and maintenance costs associated with new procurement is inappropriate since these O&M costs are actually driven by the fielding of the new system. Nevertheless, new FY85 procurement will require approximately $780M more in FY87 fielding costs and $460M more in annualized sustaining costs in FY88 and FY89.

FISCAL YEAR 1985 PROCUREMENT AND RDTE FOR THE LIGHT DIVISION

Senator **KENNEDY**. The Army is in the process of forming two Light Divisions. How does this year's procurement and RDTE efforts fit with the plans for the Light Division?

General **MERRYMAN**. The Light Division's equipment requirements are being met, essentially, through standard items, common throughout the Army. Resource requirements associated with Light Divisions that are included in the President's budget request include such items as night vision goggles and sights, small arms, tactical trucks, TOWS, engineer and fire direction equipment.

FORT LEWIS TEST BED AND PROCUREMENT

Senator KENNEDY. The Army is in the process of forming two Light Divisions. How has the experience of the Fort Lewis test bed been factored into this procurement proposal?

General MERRYMAN. The 9th Division, in conjunction with the Army Development and Employment Agency (ADEA), at Fort Lewis, Washington will continue to provide the Army a test bed for evaluating emerging technologies that increase Army tactical capabilities while reducing manpower. Resource requirements being developed to meet HTMD, Light Division and Army-wide requirements that are included in the President's budget include such items as smart munitions, deception devices, communications equipment and fire direction equipment.

SPARE PARTS

Senator KENNEDY. You state: "Today our Army is still short a large amount of the materiel which is needed to bring units up to full strength and to full war reserve stocks." Would you state in detail the areas of shortages and the current plans to meet those shortages?

General MERRYMAN. The Army is short equipment in both its units and war reserve stocks. Shortages in specific areas include those of close combat [deleted]. The procurement budgets are designed towards alleviating these shortages but we are also insuring redistribution of equipment displaced by modernization systems. We are also modernizing some older equipment, such as the CH47 cargo helicopter and even reutilizing other items such as M48 tank chassis for the Sgt. York air defense gun.

FIXED WING VERSUS HELICOPTER

Senator KENNEDY. General Merryman, putting aside current division of poles and missions, are there any missions now assigned to Army helicopter that might better be performed by fixed wing aircraft?

General MERRYMAN. No, because fixed wing aircraft are tied operationally to fixed wing bases. The nature and requirements of combat operations in the forward battle areas precludes fixed base operations.

Senator KENNEDY. General Merryman, has the Army evaluated helicopters versus fixed wing aircraft before proceeding with its procurement proposals (E.G.) the new Apache Attack Helicopters?

General MERRYMAN. Basically no, as the required operational capabilities and mission profiles to support Army combat operations rule out fixed wing aircraft as a viable candidate.

M-113 ARMORED PERSONNEL CARRIER

Senator KENNEDY. The budget proposal includes funding for only 50 M-113 Armored Personnel Carriers. Is this an efficient rate of production? What is the rationale for keeping the line open for such a small quantity?

General MERRYMAN. The production line begins to become efficient at rates of about 600 carriers per year. This includes the combined total of orders for a mixture of all of the vehicle types in the M113 family of vehicles such as the M577 Armored Command Post and the M113 that we are requesting in fiscal year 1985. Foreign sales customers are ordering these vehicles as well as others such as mortar carriers and cargo carriers that are built on the same production line. While there are obviously no guarantees that all sales will materialize, the Army believes that foreign sales will amount to 400 or more vehicles in fiscal year 1985. Keeping the line open producing affordable quantities of the carriers that we still need has been largely dependent upon foreign sales in the past few years. There are definite benefits to be derived from having a warm production base.

M-1 PRODUCTION RATES

Senator KENNEDY. Last year you testified that reducing the M1 production rate from 840 as originally proposed to 720 was about $800 million. Although Congress funded a higher amount last year, you are back again asking for 720. What is your current estimate of the additional cost associated with this lower rate?

General **Merryman**. A 720 per year tank production beginning with the fiscal year 1985 program year will cost the Army about $650 million more than if 840 tanks were produced per year.

DUPLICATION OF MISSION

Senator **Kennedy**. Secretary Sculley, do you see any duplication or overlap in missions being performed by the Army and the Air Force with respect to the Air Defense of ground forces? To be more specific, is there any overlap in the mission performed by the Army's Patriot missile and Improved Hawk missile and the mission performed by the Air Force's F–15 and F–16? In addition, are these weapons systems in any way inconsistent or incompatible? Can Patriot and Hawk function at the same time that F–15s and F–16s are flying without jeopardizing our own fighters and fighter pilots?

Dr. **Sculley**. The missions performed by the Army's Patriot and Improved Hawk missile systems and the Air Force's F–15 and F–16s are complementary with respect to the air defense of ground forces. Basically, the Army systems provide dense, in-place firepower in the geographic area of employment. The Air Force systems provide a flexible response which can be concentrated for relatively short periods of time. Synergism can be achieved when the missile systems and interceptors are used in the same defense.

Weapon systems integration is accomplished by the Regional Air Defense Commander. All Air Defense forces must follow his rules and procedures which provides for centralized management of the total air battle. During the execution phase of the air battle command and control is exercised through an extensive communications network. Weapons assignments are paired with hostile targets to maximize defense effectiveness, and engagements are closely monitored to guard against surface to air missile engagement of friendly interceptors.

Both services are pursuing programs to improve target identifications and command and control communications.

BATTLEFIELD NUCLEAR WEAPONS

Senator **Kennedy**. You state that you are complying with congressional directives to terminate the improved 155mm nuclear shell program in FY 84. Is there any funding for 1985 and beyond for this program? What is the purpose of this additional request? What is the position of the allies on the storage and use of these weapons?

Dr. **Sculley**. The Army and Defense Department strongly believe there is a requirement for a modern 155mm nuclear projectile to preserve the deterrent value of our non-strategic nuclear forces at the lowest possible level of weaponry. This is also the position of our NATO Allies. The October 1983 Montebello Decision [deleted]. In addition, the NATO High Level Group (HLG) report on NATO nuclear forces [deleted]. Therefore, the Army's FY 1985 budget request includes $15 million for research and development funding. This request, if approved, will allow for completion of a limited technical data package.

Our preferred avenue is to complete the research and development (R&D) program and produce the improved 155mm nuclear projectile. The current estimated cost of this proposal requires [deleted]. Our FY 1985 request is part of these estimated totals.

CHEMICAL WEAPONS

Senator **Kennedy**. As you know, last year Congress rejected the administration's request for the production of new chemical weapons. This year the Army is again requesting funding for procurement of 155mm chemical weapons. In your statement you state that the current stockpile is "inadequate" (page V–3). Has the Army any new information that would contradict the findings of Secretary Weinberger's Blue Ribbon Panel on March 22 of last year that the military utility of existing 155mm shells "has not been seriously degraded to date"?

General **Merryman**. The statement on page V–3 of the Joint Statement to Congress on the FY85 Army RDTE and Procurement Appropriations that "the stockpile is composed of weapons and agents that are inadequate" is accurate and in consonance with the findings of the Office of the Secretary of defense's Blue Ribbon Panel on Chemical Stockpile Condition.

The Blue Ribbon Panel's charter was a narrow one, being limited to an examination of the present and projected (to 1990) physical condition of only the 155mm and 8-inch artillery projectile and the air delivered bomb components of the total stockpile. It was a technical review of the actual and potential deterioration of the metal components and chemical agent that make up these munitions. The panel only studied 7 percent of the total stockpile that was the most useful, and in the best condition. The panel's findings are not reassuring. They confirmed that some agent in these munitions has decomposed (although presently not enough to jeopardize their usefulness). They voiced concern that the phenomenon of flashing in our persistent agent (VX) artillery projectiles (agent burning during dispersal thereby reducing its on target effectiveness as much as 70 percent) may be more common than originally believed and may be aggravated by agent decomposition. Even more disturbing, the panel concluded that there is insufficient evidence to reliably predict the condition of these munitions in 1990. They stated that: "currently, it would appear that by 1990 decomposition of the agent could be as little as an additional 5%, or so great as to render the munitions almost useless. It is our best estimate that at least 50 ± 10% of the agent should still be present in 1990, and at least half of the 155mm/8-inch artillery munitions should meet the Army standards for being fully usable with respect to agent. However, it is within the range of possibility that catastrophic decomposition could occur, due to stabilizer disappearance or other factors, yet unknown."

On the plus side of the ledger, the panel did find that the metal components of the munitions are holding up reasonably well. They recommended a number of measures that may fill data gaps and possibly extend the useful life times of some of the agent. The Army has studied these recommendations and is implementing them where it can cost-effectively do so.

The Joint Statement to Congress on the other hand, focuses on the military usefulness of the total stockpile. The key questions are: do we have the right types of agents in the right kinds of munitions and in the right quantities to be used effectively within the context of modern battlefield tactics and conditions? The answer is "no" on all counts. Additionally, age and condition, as addressed by the Blue Ribbon Panel, are also of concern to the Army. These factors undermine our confidence that the current munitions will perform as designed, if put to the test. The disparity between munitions on hand versus the munitions that will be required on the modern battlefield cannot be remedied by upgrading the condition of the current stockpile. No amount of management of the present stocks will cure the critical deficiency of being unable to influence the deep battle with persistent chemical agents. We simply do not have such munitions. Without a deep-strike (persistent agent) capability, US commanders will be unable to attack Soviet follow-on forces (to wear them down) nor be able to affect the logistic lifeline that will sustain the Soviet forces in their attacks. Further, the stockpile has insufficient 155mm nonpersistent (GB) rounds to meet identified requirements. Unless we provide modern chemical artillery projectiles, we will be unable to force Soviet attacking units to adopt the performance-degrading protective posture we will have to assure because of the Soviet chemical first strike threat.

The Blue Ribbon Panel findings and the Joint Statement to Congress both highlight, in a complementary way, the critical need for modernizing the US chemical weapons stockpile. Because the production base construction and weapon acquisition processes are long and complex, we need to move ahead now with measures keyed to preparing for production—continued work on the production base and acquisition of longer lead time munition components. Such prudent, carefully measured readiness steps are vitally needed to give us the ability to proceed with modernization in a reasonable time span, should the President and Congress find it necessary to do so.

ARMY HELICOPTER IMPROVEMENT PROGRAM (AHIP)

Senator **Kennedy**. The current budget contains $268.5 Million for the Army Helicopter Improvement Program to upgrade the capability of Army Scout Helicopters. It also contains $75 Million for the LHX—designed to be the next generation Scout Helicopter. How long will the AHIP scouts be in service? Why should we invest in substantial upgrade of existing scouts when we are planning to replace them in the near future?

General **Merryman**. The Army Helicopter Improvement Program (AHIP) scout helicopter will remain in the inventory until it is no longer cost effective to improve it or extend its operational life, probably beyond the year 2015. The Army needs an improved, survivable battlefield coordination aircraft now. Without AHIP, our AH-64 attack helicopters would be deployed and operate without a compatible scout for a minimum of 6 years. The Army's Aviation Modernization Plan includes AHIP and LHX as complementary systems, not competitive. Without AHIP, we would have to procure additional, higher cost LHX aircraft to fill scout requirements which are currently planned to be filled by AHIP. The Army has limited the total AHIP buy to the immediate, essential requirement, in view of LHX coming along in the 1990s. The balance between near term need and requirement for an advanced technology aircraft is also indicated by the fact that the last year of AHIP procurement (1990) is the first year of LHX procurement. The alternative to AHIP is to continue operation with the current Vietnam vintage observation aircraft (OH-58A and OH-58C) which have limited performance and night/adverse weather capability, no target acquisition/designation except for the binocular aided human eye, and a suite of aging radios which provide limited capability for communication in the Nap-of-the-Earth flight environment.

QUESTIONS SUBMITTED BY SENATOR CARL LEVIN

EQUIPMENT INCREASES

Senator LEVIN. On Page 4, you claim credit for the Reagan administration by saying: "Today we have quantities of weapons systems tht are a direct result of the additional funds you started providing in Fiscal Year 1981. As of 31 January: there are 1606 M-1 Tanks accepted; there are 918 Bradley Fighting Vehicles accepted; there are 477 Black Hawk helicopters accepted" and so on.

Isn't it true that the previous Administration proposed procurement of most of these weapons at similar levels, and that the numbers added to each program by the Reagan Administration are quite modest?

Please identify for the record the number of each system directly attributable to Reagan Administration requests for additional funds since FY 1981, not including additions which resulted from Congressional initiatives.

Dr. SCULLEY. The following chart depicts by weapon system the proposed levels of procurement as of January, 1981 (Fiscal Year 1982 President's Budget) compared with the proposed levels of procurement as a result of the fiscal year 1981 supplemental, the fiscal year 1982 budget amendment and the fiscal year 1983 and 1984 Budget Requests. Also depicted are the actual appropriated quantities.

[Quantities]

	Fiscal year—				
	1981	1982	1983	1984	Total
M1:					
Prior [1]	360	569	627	847	2,403
Revised [2]	569	720	776	720	2,785
Actual	569	665	855	840	2,929
BEV:					
Prior	300	464	427	469	1,660
Revised	400	600	600	600	2,200
Actual	400	600	600	600	2,200
UH-60 Black Hawk:					
Prior	80	78	90	70	318
Revised	80	96	96	84	356
Actual	80	96	96	84	356
Stinger:					
Prior	1,356	1,974	2,412	3,535	9,277
Revised	1,356	2,544	2,256	1,508	7,664
Actual	1,144	2,544	1,006	1,205	5,899
MLRS missiles/launchers:					
Prior	2,340/32	2,496/68	25,968/72	25,968/76	56,772/248
Revised	2,340/32	2,496/68	23,640/72	36,000/76	64,476/248
Actual	2,340/32	2,496/68	23,640/72	36,000/76	64,476/248
AH-64:					
Prior		8	44	51	103
Revised		14	48	112	174
Actual		11	48	112	171

[1] Reflects level in the fiscal year 1982 President's Budget as of January 1981.

[2] Reflects levels as a result of the fiscal year 1981 Budget Supplemental, the fiscal year 1982 Budget Amendment, and the fiscal year 1983 and fiscal year 1984 President's Budget Submissions.

COMPETITION IN CONTRACTS

Senator **LEVIN**. On Page 11 of your statement you discuss some of the Army's management improvements to insure the taxpayers are getting more for their scarce defense dollars. You specifically address competition and attempts to challenge sole source procurements and you say the Army has increased its competition performance from 37.1 percent in 1980 to 41.5 percent in 1983. Without addressing whether a 4.4 percentage point increase is significant, can you tell me whether you are measuring this in terms of dollar value of contracts or numbers of contracts?

Isn't it true that the majority of contracts in terms of dollar value—the most meaningful measure—still are sole source for the entire DOD? Is this true for the Army, also?

General **MERRYMAN**. a. Competition performance is measured in terms of the percentage of competitive dollars awarded out of total dollars available for competition.

b. While competition is the preferred method of procurement and a substantial portion of our total contract dollars awarded are based on competition, a portion of our "follow-on" contracts are non-competitive awards following initial price competition or design/technical competition. Normally these "follow-on" awards are for major weapon systems and are of high dollar value. Therefore, the majority of total dollars are represented on contracts awarded on a non-competitive basis.

PROCUREMENT/ACQUISITION

Senator **LEVIN**. You mention the Army's establishment of competition advocates and say they will review acquisitions worth more than $10,000 for competition, including a review of technical data for that item. The Air Force has proposed that proprietary rights for defense articles expire after five years. What is the Army's position on applying that to present and future Army procurements/acquisition?

General **MERRYMAN**. The Army has no particular objections to including into future contracts a stipulation that proprietary rights expire after a stated number of years. It would probably be desirable that the number of years after which the proprietary rights would expire be determined as part of contract negotiation as opposed to an arbitrary number of years. The Army will also attempt in future development contracts to acquire necessary proprietary rights during negotiation of these contracts. No action is being taken at this time to eliminate the proprietary rights in on-going contracts. To eliminate these rights would require agreements through negotiation with the contractors and involve financial consideration from the Government.

SPARE PARTS

Senator **LEVIN**. What is the Army doing to reduce the number of "proprietary" items in its spare parts catalogs, as well as in negotiating continuing or new contracts?

General **MERRYMAN**. During screening of an item in breakout, the proprietary rights are examined to determine if they are valid. Also, in breakout an attempt is made to replace items with proprietary rights legends with standard commercial or military parts. The Army will attempt, in future development contracts, to acquire necessary proprietary rights during negotiation of these contracts. No action is being taken at this time to eliminate the proprietary rights in on-going contracts as it would require agreements through negotiation with the contractors and involve financial consideration from the Government.

DLA DEBARMENTS

Senator **LEVIN**. Your longer statement for the record, the Yellow Book, on Page I-8 claims the Army is becoming tougher in enforcing "product and contract requirements for quality." You say that "Acceptance suspension have resulted in significant improvements in quality. Defense Logistics Agency debarments and suspensions are up from 49 in FY81 to 150 in 1983."

I applaud your "get tougher" attitude. Give me some examples now, and a complete list for the record, where you have threatened major contractors or subcontractors with such actions if they did not improve their quality, with positive results, as opposed to smaller vendors whose sales to the Army do not represent large sums of money. How do we know you're just not going after the "little guy?"

Provide for the record a list of all the DLA debarments and suspensions in 1983, along with an identification of those which resulted from Army initiatives.

General MERRYMAN. A list of the 1983 DLA debarments and suspensions follows below. This list is marked with an identification of the debarments which had Army initiatives. There are, however, a number of Army debarments/suspension which are not related to DLA. A list of Army debarments/suspensions as of January 1984 is also provided on the following pages. The companies and names have been consolidated in this list. Debarments and suspensions (and threats of the same) are not used to induce contractor quality improvement. Debarments and suspensions are used to prevent Government purchasing offices from soliciting bids from, or awarding contracts to, large and small contractors alike who have: (1) Committed and/or been convicted of fraud or criminal offenses, (2) Violated antitrust statutes, (3) Committed offenses indicating lack of business integrity, (4) Committed serious violations of contract provisions such as willful failure to perform or a history of failure to perform (within the control of the contractor), (5) Violated labor standards provisions of labor statutes, or (6) Violated Equal Employment Opportunity clauses. Instead, the Army actually suspends acceptance of products in contractors' plants to improve the contractor's quality performance. Suspensions of acceptance or threatening suspension of acceptance is used as a "last resort" basis when other corrective action methods to obtain compliance to contract requirements have failed. Suspension of acceptance is threatened or enacted for large and small contractors alike. Examples of acceptance suspensions in FY83 and FY84 are provided in answer to Senator Kennedy's questions on acceptance suspension.

DEFENSE LOGISTICS AGENCY DEBARMENTS AND SUSPENSIONS, CALENDAR YEAR 1983

AAA Machine, Inc, Suspended; ABC Electronics, Debarred; Accumat Ltd., Debarred; Accumat Ltd., Suspended; Adec, Inc., Debarred to 16 Sep 86; American Gear Company, Inc., Suspended; Amity Precision Spring Company, Inc., Debarred to 14 Mar 86; Aqua-Aire Products, Inc.,[1] Debarred; Arlington Hardware Corporation, Debarred; Ronald Glenn Bailey,[1] Debarred to 14 Apr 84; Bar Aviation, Suspended; Joseph Bell, Suspended; William Bemesderfer, Debarred to 17 Jan 86; William Bemesderfer, Suspended; Benjamin Mills Co., Inc., Debarred; Boston Pneumatics, Inc., Debarred to 3 Sep 85; Sidney Branson[1] Debarred; Howard Bregman, Debarred to 19 Jan 85; Bucks Aircraft Industries, Inc., Debarred; Bucks Aircraft Industries, Inc., Suspended.

Cal Industries, Debarred; Cal Industries, Suspended; Cal Investments, Inc., Debarred; Cal Investments, Inc., Suspended; John Campbell, Debarred; C.E. Sharp Ltd.,[1] Debarred; Cecille Industries, Debarred; Anthony J. Cigllano, Debarred to 7 Feb 86; Gerald Classey,[1] Debarred to 15 Jun 84; Coal Supplies Ltd.,[1] Debarred; Jack Cohen, Suspended; Commercial Fasteners, Inc., Suspended; DFY Supply Inc., Debarred; Bernard P. Elkin, Debarred; James Emerson,[1] Debarred; Esserbridge Ltd.,[1] Debarred; Joe Essid, Suspended; Ezell and Associates, Debarred; Clara Ezell, Debarred; Daisy Foster, Debarred; Samuel G. Foster, Debarred; Michael Gasparik, Suspended; H. Saville and Sons, Inc., Indef Susp; Anna Harris, Debarred; Ronald Harrison, Debarred to 19 Jan 86; Cecil Hartley, Debarred.

Michael Hecht, Suspended; Tom Helliwell,[1] Debarred; June Helliwell,[1] Debarred; Kieth Hertz, Debarred; Malcolm Hirst,[1] Debarred; Ernest Hoesterey, Suspended; Phyllis Hoesterey, Suspended; Raymond Huffman, Debarred to 21 Oct 86; Raymond Huffman, Suspended; Huntington Apparel, Debarred to 19 Jan 86; Independent Parts Co., Debarred to 28 Dec 85; Issachar Manufacturing Co., Inc., Debarred; Kasco Metal Products, Indef Susp; William Kaser, Suspended; W. E. Knappett,[1] Debarred; Roy J. Kornblith, Debarred; Pat M. Lambert, Suspended; Raymond S. Lambert, Suspended; Robert D. Lambert, Suspended; Rose Lambert, Suspended; Russell Langille, Debarred; Levy Auto Parts, Inc., Debarred; Levy Auto Parts, Inc., Suspended.

Benjamin Levy, Suspended; Morris P. Levy, Suspended; Joel Lipschultz, Debarred to 17 Jan 86; Joel Lipschultz, Suspended; Luzerne Outerwear, Debarred to 19 Jan 86; M&M Tool, Debarred; Marmac Industries, Inc., Debarred; Joseph Martin, Debarred; Joan E. Mathews, Debarred; Richard G. McLellan, Jr.,[1] Debarred to 4 Feb 86; Richard G. McLellan, III,[1] Debarred; Medical Devices of Fall River, Indef Susp; John J. Miller, Debarred to 1 Nov 85; Kenneth E. Moore III, Debarred; Kenneth E. Moore, Jr., Debarred to 15 Apr 86; Richard E. Murphy,[1] Debarred to 12 Aug 84; Antoinette Navarro, Debarred; Rocco Navarro, Jr., Debarred; Rocco Navarro, Sr., Debarred; Colin Nike,[1] Debarred; Norfolk Packing Company, Indef Susp; North Broward Industries, Inc., Suspended; Raymond J. Outlaw, Indef Susp; Peninsula Produce Company, Suspended; Sidney Perkins, Indef Susp.

Larry A. Plymale, Debarred to 23 Mar 86; Larry A Plymale, Suspended; Precision Fasteners, Inc., Debarred; Precision Fasteners, Inc., Suspended; Al Raskin, Suspended; Rayleigh Ash Co.,[1] Ltd., Debarred; Related Industries, Inc., Debarred; Reuben Garment International Co., Inc., Debarred; The Roman Corporation, Debarred to 13 Jul 86; David E. Russell and Sons, Inc., Debarred; D. S. Russell and Sons, Inc., Debarred; Joseph P. Russo, Indef Susp; Mathew J. Russo, Jr. Suspended; S and P Meats, Debarred to 15 Feb 84; Leo Schweitzer III, Debarred to 23 Aug 86; William M. H. Scott, Debarred; Phillip Sharp,[1] Debarred; Terence Shaw,[1] Debarred; Arlindo Silva, Debarred; Le Roy Soffee, Suspended; Somerset Surgical Instruments Corp.

Southern Commercial, Inc., Suspended; Standard Air Parts, Inc., Indef Susp; Sidney Starling,[1] Debarred; Linda Starling, Debarred; State Fish Co., Inc., Debarred; Owen Sumpter,[1] Debarred; Sunshine Machine, Debarred; Surgical World, Inc., Suspended; Surg-Med Corporation, Suspended; Milton Tepfer, Suspended; George Theodorou,[1] Debarred to 14 Mar 84; William C. Thompson, Debarred to 13 Oct 86; Tidewater Produce Co., Indef Susp; Harold Timmins,[1] Debarred; Treasure Isle, Inc., Debarred; Universal Plastics and Tools, Debarred; V and T Machine, Inc., Debarred; Lee Vanacore, Debarred to 15 Aug 85; Maurice Van Damme, Debarred; Vito Formica, Debarred; W. E. Knappett & Sons, Ltd,[1] Debarred; Malcolm West,[1] Debarred; David Wiesen, Debarred; E. J. Wirth Machine and Tool Company, Inc., Debarred; E. J. Wirth Machine and Tool Company, Inc., Suspended; Emil J. Wirth, Debarred to 17 Jan 86; Emil J. Wirth, Suspended.

Donald Wolford, Suspended; Harold Wright, Debarred; Robert N. Wright, Suspended; Denise Yoder, Debarred; Zebulan Land Co., Inc., Debarred; Zebulan Sales Co., Inc., Debarred.

[1] Case resulted from Army initiative or assistance in investigation.

U.S. ARMY DEBARMENTS AND SUSPENSIONS AS OF JANUARY 1984

Frederick Ackerman, Indef Susp; Adams Commission Company, debarred to 10 Mar 84; Aranowitz, David, Debarred to 10 Mar 86; Browning-Ferris Ind of Georgia/James L. Baker, Debarred to 29 Apr 86; B&B Investments/Larry D. Barnette, Indef Susp; Alpha Services, Inc/Leo J. Barnette, Indef Susp; Bazar Incorporated Sales Company, Debarred to 18 Dec 83; Donald Bennett, Indef Susp; Edward Berry, Debarred to 19 May 85; Keystone Tube Co., Robert Biolchin, Indef Susp; Georgetown Marketing/Herbert J. Bitter, Debarred to 1 Mar 85; Billy Wayne Buck, Debarred to 12 Nov 85; Judge A. Causey, Indef Susp; Gordon Cizon, Debarred to 30 Jun 85; James B. Cotton, Debarred to 28 Apr 85; Federal Sales Associated, Debarred to 14 Jun 85; A. J. Fowler Corporation, Indef Susp; Roy P. Fowler Jr., Debarred to 17 Jan 86; Georgia Waste Systems, Inc., Debarred to 23 Feb 85; Thomas F. Gibbs, Indef Susp; Boston Area Academic Consortium Inc/Dr George A. Gitter, Debarred to 4 May 86.

Edward T. Goeringer, Indef Susp; C.M.D. Inc/Michael Goldberg, Debarred to 2 Apr 85; Goodfield and Goodfield Company/Edmund D. Goodfield, Jr., Indef Susp; Intercontinental Marketing Corp., Debarred to 1 Jul 85; Emerson Sales and Service Inc/David J. Kleinbart, Debarred to 20 May 85; Betty Ruth Laird, Debarred to 16 Aug 85; Arthur Lang, Debarred to 6 May 84; Charles Langello, Debarred to 17 Jan 85; Salvatore P. Luciano, Debarred to 27 Jun 84; MG Sales Corporation, 10 Aug 85; Made Rite Tool Company, Inc., Debarred to 16 Mar 85; Medi-Dyne, Inc., Debarred to 23 Jun 86; Millen Moving and Storage Co/Charles W. Millen, Debarred to 13 Mar 84; Roger Mills, Debarred to 16 Jun 86; Benjamin Mills Co., Inc/Kenneth E. Moore, Jr., Debarred to 15 Apr 86; Bobbie Ray Newton, Debarred to 6 Sep 86; North American Reporting, Inc., Indef Susp; Anthony J. Pezzello, Debarred to 19 Jun 84; Raycomm Industries, Inc/Joseph J. Raymond, Indef Susp; Charles Rodgers, Debarred to 2 Jul 85; David Rosen, Debarred to 27 Aug 84; SCA Services of Georgia, Inc., Debarred to 17 Jan 84; Gunther Schmid, Debarred to 26 Jul 85; Southern River Rock, Debarred to 1 Apr 85; Rucker E. Squires, Debarred to 19 Oct 85; H. S. Struggler and Company, Debarred to 26 Apr 85; Transport Tire Company, Inc., Debarred to 21 Dec. 84.

Treasure Isle, Inc., Debarred to 15 Apr 86; Ronald T. Ullenberg, Debarred to 19 Oct 85; George M. Upton, Debarred to 19 Aug 86; J&A Precision Company/Lee Vanacore, Debarred to 13 Aug 85; Comet Service Corp/Walton B. Wilkins, Debarred to 17 Jan 86; Edward J. Wirth Machine Tool Company, Inc/Emil Wirth, Debarred to 17 Jan 86; Worldwide Sales, Inc., Debarred to 3 May 85; Paul D. Yida, Debarred to 24 Mar 84; Yuzo Susangano, Debarred to 1 Jul 85.

SPARE PARTS

Senator **Levin**. Contrary to claims from the other services, I think the Army leads the way without much fanfare in implementing changes to its spare parts buying systems to avoid the horror stories we have been reading about. No doubt the Army has its own horror stories, but which changes have you found particularly successful which the other services have yet to implement and which might be useful for them to consider adopting?

General **Merryman**. All services have responded to the Secretary of Defense 25 Initiatives on Spare Parts Procurement. Each service has developed a plan for implementing those initiatives. The success Army has achieved is primarily attributable to the army's high rate of competition (+45 percent) in spare parts and our organization and management in the spare parts effort. Project Manager's for Spare Parts have been established for implementing the Army's Spare Parts Initiatives (Sprint) program. The scope of these initiatives extends well beyond those outlined in DAR Supplement No. 6 (Breakout). The Army plan requires continuous reporting of progress to insure that prices paid for spare parts are fair and reasonable.

ACQUISITION PRACTICES

Senator **Levin**. On page 12, you do talk about how "an Army Audit Agency review of Army acquisition practices revealed an unhealthy over dependence on the use of unpriced orders." You say you have implemented changes to prevent this from reoccurring, but for the record, provide a list of the ten largest—in dollar terms—abuses the Army found in this area.

General **Merryman**. AAA identified the problem in generic terms, as overall policy and procedures issue, not as abuses on specific contracts or programs. The primary problem found by AAA was that the final price on unpriced instruments was not being negotiated in a timely manner.

WARRANTIES

Senator **Levin**. Last August 9, Army Chief of Staff, General John Wickham was depicted as having "deplored the sloppy work of defense contractors," and blaming that for problems with the Copperhead smart artillery shell and the Pershing II missile. General Wickham was quoted as saying the Army may insist that contractors guarantee the performance of their products and refund money if they break down. What has the Army done in this area of warranties with present and future contracts and contract proposals?

General **Merryman**. The Army is doing a great deal to insure that the hardware we buy for the soldier in the field meets performance and reliability requirements.

For example we are getting warranties for our vehicles that are similar to the standard commercial warranties. The Commercial Utility and Cargo Vehicle (CUCV) has a 12 month/12,000 mile warranty on the vehicle and a 24 month/24,000 mile warranty on the drive train. This warranty also has provisions for a 10 month storage period and provides for billing back to the contractor for parts and labor if Army does the work.

In addition we utilize Reliability Improvement Warranties as incentives to encourage contractors to make the necessary changes to improve the reliability for a particular item of equipment. For example, the UH-60 Black Hawk T-700 engine was acquired with an RIW that resulted in substantial improvement in the mean time between failure (MTBF) rate, which went from 233 hours to 596 hours.

For contracts we plan to award in FY84 and beyond, the Army intends to comply fully with the provisions in Section 794 of the FY84 Defense Appropriation Act. We plan to acquire warranties whenever it makes good business sense.

Senator **Levin**. What is the Army's position on warranties?

General **Merryman**. The Army shares the basic objective of fielding quality equipment that meets our national security needs. The Army strongly advocates the use of warranties and other product performance agreements to hold contractors responsible for the product that they manufacture.

Most of our warranty experience has been with the application of the provisions of Defense Acquisition Regulations (DAR) 1-324 to commercial items at both the end item and component levels such as construction and materials handling equipment, commercial vehicles, generators, test equipment, storage batteries, engines and transmissions. A recent count shows that the Army has over 500 contracts with warranties of one type or another. Over 200 of these are in the automotive area. During the past several years we have begun to expand the use of warranties to unique military items. Currently the Army has over 100 contracts with warranties for ammunition metal parts. We have also initiated expanded warranty protection beyond the type covered by the DAR 1-324. For example, reliability improvement warranties have been used successfully to enhance the performance and reliability characteristics of selected military items.

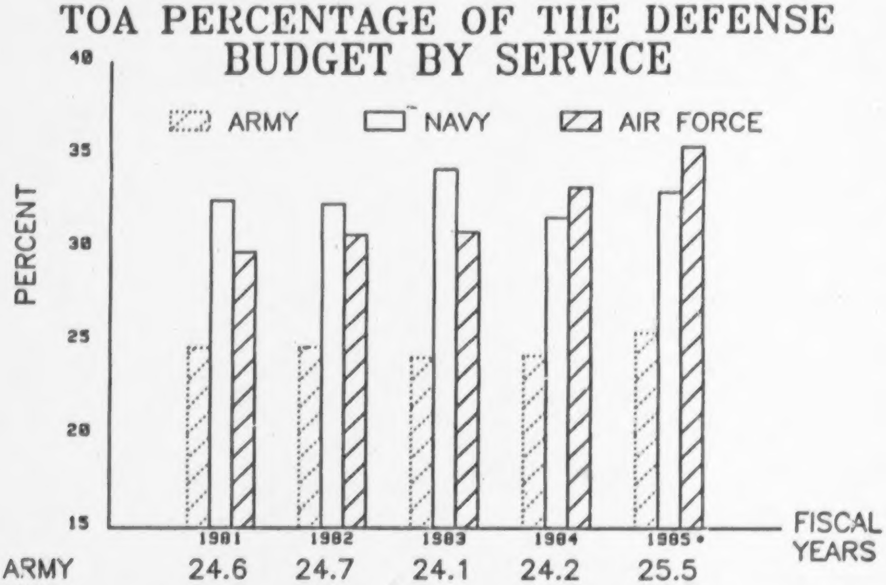
In summary, the Army has experience with warranties in acquisitions of commercial items and system components. Given the extent of our experience there is concern regarding the across the board application of the Act to all weapon systems applications at one time. Therefore, additional flexibility regarding application of the Act is necessary.

ARMY'S SHARE OF DEFENSE BUDGET

Senator **Levin**. Last August, the Washington Post also reported that an official DOD spokesman "took the unusual step of publicly stating that 'many in this building believe that the Army's share' of the defense budget 'has not been as equitable as it should have been.' "

Do you agree? The Army's share of the defense budget increased this year, but still less that the increases to the shares of the Navy—a 15 percent larger increase to its share—and the AF—a 76 percent larger increase to its share. With each percentage point and fraction of a percentage point meaning hundreds of millions of dollars, doesn't this seem like the rich are getting richer and the poorest, the Army, is getting poorer?

General **Merryman**. The Army's percentage of the Defense budget is based on national security requirements as defined by the President, Secretary of Defense, and JCS. Taken in context with these national security requirements, the Army's percent of the budget compared with the other two services is shown below.


TOA PERCENTAGE OF THE DEFENSE BUDGET BY SERVICE

	1981	1982	1983	1984	1985 *
ARMY	24.6	24.7	24.1	24.2	25.5
NAVY	32.6	32.4	34.1	31.6	33.1
AIR FORCE	29.8	30.7	30.9	33.3	35.6

* Includes Military Retired Pay Accrual

The Army's percent of the budget has increased in fiscal year (FY) 1985 to 25.5 percent. However, this increase was due to the establishment of a Military Retired Pay Accrual account which increased the Army's Budget Authority by $6.7 billion dollars, but did not add to military capability. Adjusted for Military Retired Pay Accrual, the Army's percentage of the Defense budget would be 24.7 percent.

Two years ago, the Army made the decision to accept a smaller Army and to initiate essential modernization programs using the resources formerly devoted to personnel costs. This decision provided additional funds for modernization within the

25 percent peacetime funding level by reducing the percentage of the Army's budget used to support active force personnel from 30 percent in fiscal year 1980 to 22 percent in fiscal year 1985 (excluding Military Retired Pay Accrual). Any decrease in the Army's share of the budget will delay its modernization efforts as originally planned.

DIVISION AIR DEFENSE (DIVAD) GUN

Senator **Levin**. Doctor Sculley, the Division Air Defense (DIVAD) gun has been getting terrible press lately. Delivery of the first gun is six months behind schedule. The contractor admits to problems in a key radar component even after a re-test of the first production gun. I understand there was a meeting last Friday between the Army and the contractor where some of the disagreements between the two were settled and an approach to solving DIVAD's problems was agreed upon. Is this true and what was the outcome of the meeting?

Dr. **Sculley**. A meeting was held in the Pentagon on March 2, 1984, at which the contractor presented to the Army his assessment of why deliveries had slipped, what actions he had taken to correct problems, and his proposed recovery schedule. That schedule showed recovery in delivery of fire units to within one month of the original schedule by the end of the fiscal year 1983 funded delivery period and full recovery to the original schedule by the end of the fiscal year 1984 funded delivery period. The Army is now evaluating that plan. No disagreements between the contractor and the Army were discussed.

Senator **Levin**. Doctor Sculley, I understand there is a disagreement within the Army between the level of risk involved in solving the software problems which are causing the major performance deficiencies of the system's fire control system radar. I understand that the Program Manager, the man responsible for day-to-day management of the DIVAD program, thinks the solutions will be more difficult to achieve than do you and some of your technical advisers. Is this true, and can we hear from you and the Program Manager as to why you disagree?

Dr. **Sculley**. There is no disagreement between the Project Manager and me or my technical advisers on the level of risk involved in solving the software problems in the system. Both of us agree that those problems are not difficult to solve and are not uncommon for any major system at this point in production. The Project Manager takes a little tougher and more critical posture in his assessment of the contractor's ability to meet his proposed delivery schedule than do I. However, both of us believe in his ability to produce and that his schedule is entirely achievable.

Senator **Levin**. General Merryman, I understand that the approach selected by the Army for solving DIVAD's problems is the higher risk approach, is that true?

General **Merryman**. The general nature of the "hands-off" accelerated acquisition strategy required acceptance of a certain level of risk. The Sergeant York contract, however, places most of that risk on the contractor. This fixed price incentive fee contract binds the contractor to rigid performance and reliability specifications. A higher risk approach has not been adopted to solve the problems that exist in this program.

Senator **Levin**. General Merryman, the fiscal year 1984 contract not yet signed for DIVAD has an option which would permit the Army to procure about 13-17 fewer guns in fiscal year 1984. If Army exercised this option, which would mean about 113-117 guns would be bought in fiscal year 1984, and if Congress restructured the fiscal year 1985-fiscal year 1987 annual buys from 131, 116 and 94 to about 116 annually, with the rest being bought in fiscal year 1988, how much money would we save in fiscal year 1984 and fiscal year 1985, and how much more would we save in fiscal year 1984 and fiscal year 1985, and how much more would the program cost us in fiscal year 1987 and fiscal year 1988? Provide specific cost figures for the record.

General **Merryman**. Specific cost figures for a restructured program as you have outlined would be as follows:

	Fiscal year—					Total
	1984	1985	1986	1987	1988	
Quantity	117	116	116	116	7	
Procurement Cost Changes (dollars in millions)	−34	−30	+10	+220	+28	+194

Another alternative along the same lines that would prevent having a fiscal year 1988 program would be:

	Fiscal year—				Total
	1984	1985	1986	1987	
Quantity	124	116	116	116	
Procurement Cost					
Changes (dollars in millions)	−16	−32	+10	+218	+180

Senator LEVIN. Why isn't this program a more stable and prudent one, considering the risks still involved and the unresolved problems with the DIVAD gun?

General MERRYMAN. The problems in the Sergeant York program are not unusual or show-stopping. The production start-up problems being encountered are typical of any major weapons system. The risks involved are considered less than for most other programs because of the contractual arrangements between the Army and the prime contractor, Ford Aerospace. The contract binds Ford to delivery of a quality product that meets rigid performance and reliability specifications. We feel that the Sergeant York program is a prudent one and one that is vital for the defense of our forward deployed forces.

C^3 MODERNIZATION

Senator LEVIN. Last year, Congress cut the Army's budget request in the unglamorous communications account by $237 million. As a result of this cut, and concerned about affordability of C^3 modernization, the Army restructured its procurement program and, I understand, now thinks it can improve battlefield communications at a lesser cost.

If such a large cut was so great an incentive to cost savings, how can you assure us there isn't even more "fat" in this account?

General MERRYMAN. The Army had already initiated a review of its communications program prior to the congressional cut; however, the cut did accelerate the effort. Army leadership was concerned about the ability of the planned equipment to support the Airland Battle Concept, the increased number of personnel required to operate the equipment, and the overall affordability of the communications modernization effort.

The initial output of the review was the decision to incorporate nodal control features into the AN/TTC-39 Circuit Switch instead of buying Communications Nodal Control Elements resulting in both personnel and dollar savings. This decision was made in time to be included in the Fiscal Year 1984 Appropriation Bill; however, the rest of the review was not completed until December 1983. Major results of the review are summarized below.

The TRI-TAC equipment for the Corps was developed to support the doctrine of the 1970's in which divisions fought the battle and the Corps provided necessary support. Present doctrine requires the Corps commander to direct the overall battle effort. This requires the Corps to have the same mobile and flexible communications system planned for the divisions-Mobile Subscriber Equipment. The larger and more capable TRI-TAC equipment is still needed to provide communications at echelons above Corps where the larger capacity is required.

The results of this review were included for fiscal year 1985 in the budget request and are being included for the outyears in the development of the fiscal year 1986 budget. While the Army is refining the details of the plan to implement these decisions, only minor additional changes are anticipated. No further major reductions are possible without causing unacceptable degradation of communications support.

M1

Senator LEVIN. The Army now intends to complete its buy for M1's in fiscal year 1990, which means that final deliveries of the 7058 M1's will not be to the field until about 1992 at the earliest. Isn't it true that the Army's original plan was to deliver the last M1's to its troops in 1987, so that the current plan is now five years behind when the Army thought this tank would be fully fielded? The present program costs more than building at 840 annually, isn't it? How much more money does it cost the

U.S. taxpayers to build the M1's at 720 tanks for the rest of the program, compared with a program of 840 tanks annually?

General **Merryman**. The original (1972) Army Plan for producing Abrams Tanks called for 3312 units, with last delivery in 1989. The rate was later increased with last delivery moved up to 1987. In 1977 when the total M1 production increased from 3312 to 7058, the schedule was realigned again and last delivery expected in 1990. In 1978, the Army again proposed an accelerated delivery schedule, with a peak production rate of 90 per month to be reached by the end of the third year, which would have delivered the last tank for 1987. Recent budgetary constraints have driven the latest Army position to cap production at 60 per month. A 720 per year tank production beginning with the fiscal year 1985 program year will cost the Army about $650 million more than if 840 tanks were produced per year.

Senator **Levin**. The Army had a good experience with the M1 in the hands of the troops. In addition to the excellent M1 performance in the Reforger combat exercises in Europe, I understand that regular operational experience with the M1 also is impressive.

General **Merryman**. That is correct.

Senator **Levin**. For example, I understand that the 3rd Infantry Division in Europe, the first unit to get the M-1, has had a 95 percent operational availability rate for the tank in fiscal year 1983. I also understand that of the entire 5 percent of the time that the tank was not available to this unit in fiscal year 1983, only 4 percent of this 5 percent was due to engine problems, is this true?

General **Merryman**. Yes.

Senator **Levin**. Provide for the record a comparison of M1 availability in all M1 units with those units which have M60A1 and M60A3 tanks.

General **Merryman**. Comparison of the M1 with M60 series tanks is:

FLEET AVAILABILITY

[Fiscal years by quarters]

	1982	1982	1983	1983	1983	1983
	3	4	1	2	3	4
M1[1]						
M60A[1]						
Other tanks[1]						

[1] Data deleted.

PATRIOT

Senator **Levin**. The Patriot air defense surface to air missile system had problems in its latest performance tests in the areas of crew training and system availability, especially with hardware and software deficiencies, lack of spares and extended repair times. I also understand that delivery of five fire units is behind schedule and that the Army has again slipped the system's IOC—this time from October, 1984 to December 1984, after it originally was slipped from April, 1984.

At the same time, the West Germans and Dutch have decided to buy the system, and it is expected they will buy three units in fiscal year 1985.

Considering this, and the present problems, why shouldn't Congress cut the fiscal year 1985 request by three fire units and permit foreign sales to maintain the production rate, presumably without adverse employment impacts? This would save at least $100 million in fiscal year 1985.

Provided for the record how much it would save, as well as how much it would cost to but these US units at a later date in the proram.

General **Merryman**. If the fiscal year 1985 U.S. Army program is cut by 3 fire units from 15 to 12, there is a possibility that foreign sales could manintain the total production rate of 15 fire units in fiscal year 1985. Currently the only firm foreign sales for Patriot in fiscal year 1985 is for 1 of the 4 fire units that the Netherlands Air Force will procure at the rate of 1 per year starting in fiscal year 1984. There is a possibility that the German Air Force may also be able to procure 1 or 2 Patriot fire units in fiscal year 1985. However, German Air Force funding for a fiscal year 1985 procurement of Patriot is dependent on approval of the overall German/U.S. Air Defense agreement by the German Parliament later this year. In any case deployment of U.S. Army Patriot fire units will be delayed at least one year.

If the fiscal year 1985 planned Patriot procurement were reduced from 15 fire units and 585 missiles to 12 fire units and 440 missiles, a reduction of 3 fire units and 145 missiles, the savings is estimated to be 109.9 million for end items and 15.2 million for spares or 125 million in total. The estimated replacement cost for this equipment in the outyears is $199.2 million.

Senator **Levin**. Fiscal year 1984 is the fifth year of Patriot production. The Army intends to sign a firm fixed price contract for fiscal year 1985 but is considering either a firm fixed price or fixed price incentive contract for FY 84. Why should the government share any of the risk on this system in fiscal year 1984, with a fixed price incentive contract?

General **Merryman**. The fiscal year Contract will include stringent acceptance procedures which require the contractor to demonstrate Mean-Time-Between-Failure (MTBF) requirements and absorb all costs necessary to meet system requirements. The contractor has not demonstrated experience in meeting these reliability testing criteria. Therefore, a Fixed Price Contract could place an unreasonable risk on the contractor. If the contractor was forced to propose a Firm Fixed Price Contract, the resulting proposal would contain risk funds that would probably make the proposal unaffordable. The only alternative would be for the Government to negotiate a Fixed Price Incentive Contract.

Senator **Levin**. The cost of the Apache advanced attack helicopter, over the entire program, seems to be going down, which is a good sign. Why shouldn't the Army insist on a firm fixed price contract for it in fiscal year 1985, as requested by Congress, despite contractor hesitation? I understand the Army may be considering backing away from this type of contracting, is this true?

General **Merryman**. The Army has entered into Firm Fixed Price (FFP) contracts for the fiscal year 1984 buy with Hughes Helicopters, Incorporated (airframes) and General Electric (engines) one year earlier than requested. The fiscal year 1984 contracts with Martin-Marietta (Target Acquisition Designation Sight/Pilot Night Vision Sensor) are fixed price incentive. The Army intends to pursue FFP contracts in fiscal year 1985.

QUESTIONS SUBMITTED BY SENATOR JEFF BINGAMAN

CONVENTIONAL DETERRENCE IN EUROPE

Senator **Bingaman**. On page 2 you state "if the United States does not have a credible deterrent in conventional warfare, the probability of a major nuclear war is increased." Isn't it true that, among other things, our allies on either side of the U.S. Corps in Europe are going to start to run out of ammunition and other items after a week or two? Doesn't the credibility of the conventional deterrent in NATO depend much more on our allies strengthening their conventional capabilities than on anything the U.S. is doing?

Dr. **Sculley**. It is true that our NATO allies, in general, do not now have enough war reserves, particularly in the area of munitions, to sustain the initial stages of a conventional conflict in Europe. The Defense Planning Committee (a group made up of NATO's Defense Ministers) in December 1983 recommended that every possible effort be made to improve conventional forces and in particular improve war reserves stockages. U.S. war reserves for a NATO War also suffer shortages, especially in major end items. The credibility of the conventional deterrent in NATO is dependent upon the collective determination of the alliance to improve its conventional capabilities. Paramount to improving deterrence in NATO is an active, assertive U.S. leadership which sets the example and provides our allies the assurance necessary to bind the alliance together. Therefore the degree and quality of what the U.S. is doing in the improvement of conventional capabilities is as important as what our allies are doing to develop a credible deterrence.

PERSHING MISSILE SYSTEM

Senator **Bingaman**. Would you please explain to the committee why, in order to keep 108 Pershing II missiles on launchers in the field, the army has to [deleted] Pershing II missiles? Exactly what is the breakout of that number?

General **Merryman**. The total procurement quantity of [deleted] breaks out into four major categories: operational missiles, operational readiness float, test missiles and reserve missiles.

The operational or tactically deployed missiles total 108. These missiles will be deployed on launchers and are spread among the three firing battalions—36 missiles each—of the 56th Field Artillery Brigade in Europe.

In order to maintain these 108 missiles in an operationally ready status our experience over the past 15 years with Pershing Ia indicated that we would need a readiness float of missiles. These missiles, which will be in Germany, will cover operational missiles which are in various states of repair or are in transit to or from depot.

A total of [deleted].

The remaining [deleted] worth of flight test requirements. These tests can be broken down into four categories, as follows:

Demonstration and Shakedown Operations (DASO) are tests conducted by USAREUR troops and provide the first assessment of tactical reliability and accuracy from which to derive the initial targeting factors. [Deleted] missiles are required for these tests.

Operational Tests (OT) are "one time" tests conducted by USAREUR to establish a statistical sample for formal initiation of JCS requirement for assessment of ballistic missiles. OTs will provide a first assessment sample to determine the Weapon System Reliability (WSR) and Circular Error Probable (CEP) for generation of tactical targeting factors. [Deleted] in the estimate as specified by the JCS. US Army Europe has stated that [deleted] are desired to allow [deleted].

Follow-On Operational Tests (FOT) represent the implementation of JCS guidance for annual sampling/evaluation of ballistic missiles. The FOT program is designed to randomly select units on Quick Reaction Alert (QRA) status in Europe, quarantine hardware and personnel, fly the units to CONUS, reassemble them in a tactical configuration, and then fire the missiles in as tactically realistic a state as possible for evaluation of WSR. Reliability and accuracy data from FOTs are combined with a large data base collected in the theater from countdown exercises and are used to derive targeting factors. JCS requirements are to [deleted].

Artillery/Ordnance Firings support the materiel developer through a "fly before fielding" program for hardware and software improvements (PIPs). [Deleted].

ASSESSMENT OF WEAPON SYSTEMS

Senator BINGAMAN. On page 3 you state "the tank, attack helicopter and fighting vehicle are but three examples of a growing list of systems where the Soviets have moved ahead of us in quality in addition to quantity." If this is an accurate assessment, why should this Committee continue to fund the acquisition by the Army of "inferior" weapons such as the M-1 tank, the Bradley fighting vehicle and the Apache helicopter? If there are inferior in quality to comparable Soviet systems, when can we expect the Army to develop systems that can match their Soviet counterparts. (Follow-on) Give me several more examples of the "growing list" of U.S. weapons that are inferior to their Soviet counterparts.

Dr. SCULLEY. The intent of my statement was not correctly understood. The tank, attack helicopter and fighting vehicle are three examples where the Soviets had fielded hardward superior in quality to ours. The Army modernization program includes the M1 tank, Apache helicopter and Bradley fighting vehicle to specifically address this qualitative problem. As we get more of our modernized hardware in the field this superiority the Soviets had will disappear since our new systems are not inferior in quality to comparable Soviet systems.

NORTH CAROLINA ARMY NATIONAL GUARD UNIT

Senator BINGAMAN. On page 5 of your statement you note that a battalion of the North Carolina National Guard has begun to receive both the M-1 tank and the Bradley fighting vehicle. Can you state the wartime mission for this unit—to what location does it deploy, and how long after the war starts does it arrive at the theater?

Dr. SCULLEY. The 2/252d Armor Battalion, North Carolina Army National Guard, was the first Army National Guard unit to receive the M-1 tank and the Bradley fighting vehicle in June, 1983. The battalion has a roundout mission to the 2d Armor Division which would deploy to reinforce U.S. Army Europe. The battalion would arrive in theater between [deleted] after deployment begins for all U.S. forces under that Operations Plan.

RATIONALIZATION STANDARDIZATION AND INTEROPERABILITY (RSI)

Senator BINGAMAN. General Merryman, if the Army's FY 85 budget request were to be approved as submitted (and, this is obviously a hypothetical question), would you enumerate specifically what programs or items will contribute to the Defense

Departments objectives of greater rationalization, standardization, and/or interoperability with our NATO allies?

General **Merryman**. A specific enumeration of all programs and items would, of course, be extensive, depending upon the scope and the bits and pieces that border on the fringes of our RSI efforts. There are six efforts, however, that are principal in contributing significantly to greater RSI with not only our NATO allies but with our other allies as well. These six are briefly identified in the following paragraphs:

1. Patriot. This is the Army's new all altitude missile system. It has a fast reaction capability, a high firepower, and an ability to operate in a severe electronic countermeasures environment. It is in its fifth year of production. We are currently working with several NATO nations and with Japan as well on an acquisition program. Two nations are especially of interest here. First, in December 1983, Secretary Weinberger and his German counterpart, Minister Woerner, signed an historical agreement for improving both German and American air defense systems in Germany. This agreement includes provisions for the U.S. Army to procure 14 Patriot fire units for the German Air Force. In return for this U.S. investment, Germany will procure 27 Roland Fire Units and provide manpower and support for these units to defend three U.S. Air Force bases in Germany. The German Air Force will also operate and support 12 U.S. Army Patriot fire units planned for deployment to Germany. Second, in February 1984, The Netherlands Air Force signed a Foreign Military Sales Case with the U.S. Army for procurement of four Patriot Fire Units. These units will replace the aging Nike Hercules units that The Netherlands is beginning to phase out. The combined impact of both of these actions is that an improvement will take place in NATO ground base air defense systems and in NATO standardization of deployed surface-to-air missile systems.

2. Copperhead. This is our cannon-launched, guided projectile that moves toward a laser beam reflection beamed at a target. It is now in its third year of production and we are committed to buying approximately 31,000 rounds under a program funded at $1.6 billion. Thre is no counterpart to Copperhead in the inventory of any foreign army at this time. We and the contractor have been pursuing discussions with several countries, but we are seeing little interest in Copperhead purchases. This is most likely a result of turbulence in the program during the initial phases. Problems, however, have since been resolved and we have registered since July 1982 a system's reliability in lot testing consistently greater than 80 percent. This is the story we are now telling to potential customers, and we are advocating sales to reduce the overall unit costs in addition to helping to improve the defensive posture of our friends. So far, Japan has purchased 25 rounds for compatibility testing, and has expressed an interest in both foreign military sales and in co-production. Korea is also discussing co-production. A U.S./Korean license has now been approved, and work on a Memorandum of Understanding has been readied for implementation when the Korean formal request has been received.

3. TOW. The U.S. Tube-Launched, Optically Tracked, Wire Command-Guided (TOW) missile is the most powerful antitank weapon used by the infantry. It has been in our inventory for several years. A TOW Thermal Night Sight and an improved warhead have been fielded. Production of TOW-2 missiles and modification kits to convert basic launchers to the TOW-2 configuration is in progress. Deliveries of these missiles and launcher modification kits began in early 1983. Over 35 nations have purchased the TOW and the Improved TOW systems. Canada, Denmark, Germany, Greece, Italy, Spain, Sweden, Turkey, and the United Kingdom have purchased the TOW system or its derivative through the Foreign Military Sales program. These nations are currently pursuing possible purchase of the TOW-2, and a fourth may consider doing this purchase also. Incidently, Finland, which is outside of NATO, has also purchased the TOW system.

4. Hawk. This is our low-to-medium altitude air defense missile system. It has never been used by the United States in combat, but in its basic configuration it was used by another nation to destroy over a score of high-performance aircraft during the 1973 War in the Middle East. We are feeling an ever increasing pressure from both Europe and South America for the purchase of additional Hawk systems. Our current production, however is geared for foreign military sales and for U.S. Marine requirements only. In January of this year Norway announced plans for purchasing an acquisition radar system for use with the Norwegian Hawk Air Defense System.

5. AH64 Mission Equipment Package (MEP). The AH64 (Apache) aircraft is a quick-reacting, airborne antitank weapon system. The aircraft is in production and is scheduled for initial delivery in 1984. Germany has expressed an interest in a cooperative program that will include the AH64 Target Acquisition Designator Sight and the Pilot Night Vision Sensor (TADS/PNVS) for their Panzer Attack Helicopter. A joint working group has been established to develop a Memorandum of Un-

derstanding (MOU). While this arrangement will not affect the initial procurement and deployment of Apache aircraft to Europe, a good potential exists for mission equipment and spare parts to be produced as a follow-on. In addition, the Government of Israel submitted a formal expression of interest during late 1983 and has requested detailed discussions to take place on possible procurement of Apache and the mission equipment system.

6. MLRS. The Multiple Launch Rocket System is our freeflight, artillery rocket system that we will use to suppress enemy counterfire and air defense fires. MLRS fills an existing conventional fire support void that we have. It supplements cannon artillery by delivering large volumes of fire power in a very short time against critical time-sensitive targets. Germany, one of five partners in the basic MLRS international development program—the others being, France, Italy, the United Kingdom, and the United States—is developing a scatterable mine warhead. Growth potential exists for adding a Terminal Guidance Warhead (TGW) to use against enemy armor. The co-development contract for the TGW is scheduled to be awarded during FY84. The basic MLRS development phase is now completed and full-scale production is now in progress. The following adds important details:

a. MLRS is a comprehensive and successful program example that contributes to our NATO RSI effort. The program began in 1979 with a Memorandum of Understanding (MOU) involving four partners: Germany, France, the United Kingdom, and the United States. Italy joined Phases I and II in 1981. The MOU provides for a Phase I development of the basic launcher and rocket, and the development of a dual-purpose conventional munition warhead. Phase II is the German scatterable mine warhead. Phase III will include any advanced technologies and other enhancements. Currently, Phase III includes only the TGW development program by the four original partners and a binary chemical warhead development program by the United States.

b. Phase I development has been accepted for production and inclusion into the armed forces of Germany and the United Kingdom. France will announce a decision soon. The launcher and rocket will be interoperable systems to include operator prompts in English, German, and French languages that are programmed into the launcher fire control system. A configuration control board has been established to review proposed changes and to ensure RSI continues.

c. Phase III TGW development is the first major cooperative development program entered into by the United States. The four original partners have agreed on the military and technical requirements of the antiarmor warhead. Equally shared developmental costs and industrial participation by the international consortia who are required to do substantive development work in each nation will assure that RSI efforts continue.

d. Participation by allied military officers assigned to the MLRS Project Management Office, and the extensive management participation at Headquarters, Department of the Army, and at the Office of the Secretary of Defense, are contributing to this excellent international cooperative endeavor.

JTACMS

Senator **Bingaman**. What is the status of JTACMS and JSTARS from the Army's perspective?

General **Merryman**. The Joint Tactical Missile System (JTACMS) is in the final stages of concept formulation. The Army should complete its requirements process this month. We will then sit down with the Air Force and determine the joint requirements. This process should be completed by the end of April or the first part of May. The Joint Surveillance and Target Attack Radar System (JSTARS) Program on the other hand will release a Request for Proposal (RFP) to industry this month and award a full scale engineering development contract in August 1984.

Senator **Bingaman**. Are you and the Air Force in agreement onthe requirement for JTACMS? For JSTARS? If not, what are the areas of disagreement between you and the Air Force.

General **Merryman**. As I mentioned earlier, the Army and Air Force should sit down next month and determine if there are any areas of disagreement between the services on the JTACMS requirements. JSTARS requirements have been jointly agreed upon by the services.

FORCE MODERNIZATION

Senator **Bingaman**. On page 2 of your statement, you say "We can improve the credibility of our conventional warfare deterrent by using high technology to: . . . reduce manpower and cost." Yet General Lawson before this Committee two weeks ago said "Modernization programs must be reassessed in view of the European End Strength decision as the associated personnel needed to support modernized systems may preclude this deployment to Europe. . . . the associated personnel and support for new systems generally are larger." He specifically cited the M-1 tank. In light of this contradictory testimony, would you give us some examples of high-tech systems that have reduced manning requirements?

Dr. SCULLEY. Naturally, the new high-tech systems provide significant operational capability over the old, and therefore generally can be expected to cost more in terms of operating resources and manpower. For example, the BFVS, unlike the M113 is more than a match for its Warsaw Pact counterpart because of significantly increased anti-armor capability. Conversely, there are cases where the introduction of a new system reduces resource requirements, particularly manpower. Several examples of these systems are the Patriot, Pershing II, Mobile Subscriber Equipment and PADs.

ARMY-DOE R&D COOPERATION

Senator BINGAMAN. I understand that you played a key role in negotiating the new Army-Department of Energy Memorandum of Understanding on Cooperative Conventional Munitions Research and Development. I want to commend you for this initiative. Could you outline some of the areas where you believe the DOE nuclear weapons laboratories will be able to assist the Army in its conventional R&D programs?

Dr. SCULLEY. We are reviewing projects proposed by the DOE labs for cooperative work. Areas which look promising include: Advanced gun projectiles and propellants; explosives; artificial intelligence; wound healing; shaped charges; multi-stage munitions; high explosive generated microwaves.

ARMY REPROGRAMING—STARS

Senator BINGAMAN. It seems to my that one of the most important R&D programs which the Army is undertaking on a joint basis with the other services is the STARS (Software Technology for Adaptable Reliable Systems) program. Time and again we hear that software problems are besetting our new defense systems. Could you tell me the status of the fiscal year 1984 reprograming request for STARS? When will it and its accompanying jusification be submitted?

Dr. SCULLEY. The Army is fully supportive of the STARS program. The Army has identified reprograming actions for STARS during fiscal year 1984. This effort is presently being worked by the Army staff.

BASIC SOFTWARE RESEARCH

Senator BINGAMAN. The STARS program appropriately focuses on improving our software production capabilities and thereby controlling the exponential growth of software costs. I understand that longer-term basic research in software science is very modestly funded at the current time. The Office of the Secretary of Defense has estimated the total for all the Services at only about $6 million per year. Would it be worthwhile in your view to set up a joint 6.1 program, similar to the Joint Services Electronics Program, to fund small research programs (about $300,000 per year) at several universities in basic software science? This would be a separate effort from the large Software Engineering Institute which, like STARS, will have a relatively near-term focus.

Dr. SCULLEY. Software research is already an important part of the Joint Services Electronics Program (JSEP). Several JSEP universities make strong software contributions. The JSEP management is discussing the possibility to add to the present program one or two universities with a predominent interest in software. In addition to active participation in the JSEP management and funding, the Army Research office is supporting the following programs with strong software orientation: The Army Artificial Intelligence Institute at U. Penna, Philadelphia, and the U. Texas, Austin. The Army Hardware/Software program.

BASIC RESEARCH AND THE TECHNOLOGY BASE

Senator BINGAMAN. You emphasize on page 8 of your prepared statement the importance of the Army's technology base programs. Last year after congressional action your research budget barely kept pace with inflation and your exploratory development budget was held constant (a 5 percent drop in real terms). Do you believe that we are doing enough to insure our long-term scientfic and technological lead over the Soviet Union? If cuts must be made in the overall Army R&D budget to meet overall budget constraints, should we try to protect the 6.1 accounts and 6.2 accounts?

Dr. **Sculley**. We have submitted a budget this year, as we did last year that provides a technology base to insure our long-term scientific and technological lead over the Soviet Union. The 6.1 Army program has enjoyed a steady and stable growth, slightly above inflation over the last several years. This program provides for a vigorous relationship with our colleges and universities. Our exploratory development program (6.2) has not enjoyed the same stability as the research program, in fact last year's request was reduced by approximately $62 million. A similar action of that nature would jeopardize our long term scientific and technological lead. We should try to protect the 6.1 and 6.2 accounts if the Army R&D budget is reduced to meet overall budget constraints.

UNIVERSITY R&D

Senator **Bingaman**. You noted in particular the importance of university research laboratories in maintaining our technological edge. Could you tell me how much of the Army R&D budget has been spent in university research laboratories over the past five years and what are the estimates of such spending for fiscal years 1984 and 1985? What additional actions should the Department of the Army be considering to strengthen the university research base from which all of our engineers and scientists flow?

Dr. **Sculley**. The following table shows the expenditures of Army R&D (6.1 and 6.2) funds to universities:

[Dollars in millions]

Fiscal year 1979	79.1
Fiscal year 1980	86.7
Fiscal year 1981	105.9
Fiscal year 1982	138.0
Fiscal year 1983	154.5
Fiscal year 1984	160.8
Fiscal year 1985	185.1

Dollar values for fiscal year 1984 and fiscal year 1985 are estimates.

The Army already has taken several steps to strengthen the university research base. Examples are: Joint Services Electronics Program; Establishment of Centers of Excellence; Mathematics Research Center; Support for Minority Colleges; University Research Instrumentation Program; Fellowship and associateship programs.

Any additional actions to maintain and stengthen the university research base will depend on a continued real increase in the Army R&D budget. With sufficient growth in the research program we would like to continue to put more research funds out to unviersities to support high quality proposals.

We would also like to be highly selective about funding more centers of excellence as we have done in the case of Vertical Lift Technology and Artificial Intelligence.

NATIONAL GUARD EQUIPMENT NEEDS

Senator **Bingaman**. The National Guard Association believes that the Army is short 88 Chaparral fire units for the Guard and has requested that we begin acquiring these systems this year. They suggest a buy of 20 fire units for $40 million. Could you outline the Army's plans for Guard air defense modernization? It seems to me that there is both a tremendous need for such modernization and an opportunity for the Army to shift some missions such as Corps Air Defense to the Guard. Specifically, do you support the proposed add-on?

Dr. **Sculley**. We share your concern about modernizing the Army National Guard. Currently, we plan to displace the aging Duster from eight air defense battalions by the fiscal year 1989-90 timeframe. A combination of Product Improved Vulcans (PIVADS) and Chaparrals displaced from Active Component units will be provided to do this. Our plans do not require purchase of Chaparral fire units in fiscal year 1985, but we have programed purchase of 104 Chaparral with support equipment in the fiscal year 1986-90 timeframe.

Modernization of Army National Guard is ongoing: 12 new Chaparral from active component repair cycle floats are scheduled to be provided to the Guard in September 1984; other Chaparral and PIVADS are scheduled to be provided between 1986-90 as they are displaced from Active Component units. We are providing 27 U.S. Rolands to 5th Battalion 200th ADA during 1984 and 1985; training is ongoing. Stinger is scheduled for the United States. Roland battalion, Round Out units and other ARNG units. Two battalions of Hawk are planned to be displaced from the

Active Component for the Guard during fiscal year 1986-90. The National Guard Bureau is developing stationing plans. As funds permit, Sgt York guns will be provided to National Guard air defense artillery battalions supporting heavy divisions. The National Guard will also be an integral part of the Army's plan to provide air defense at the Corps level.

Senator BINGAMAN. Another key shortfall which the Guard Association has identified is in attack helicopters. They are recommending an add-on of $31 million for the fiscal year 1985 budget for long-lead items to permit an add-on buy of 36 AH-64 helicopters for the Guard in fiscal year 1986. They are also recommending an add-on of $45.8 million in fiscal year 1985 to modify 30 AH-1G helicopters to the AH-1S configuration for issuance to the Guard. Could you outline for me your plans with regard to attack helicopter modernization in the Guard? Specifically, how do you plan to remedy the equipment and do you support the proposed add-ons?

Dr. SCULLEY. AH-1S attack helicopters will be issued to the Army National Guard (ARNG) as the AH-64 is fielded in active component units. This process provides for more than 270 Cobra's for the ARNH between 1985 and 1989. Additionally, under procurement of 515 AH-64's [deleted]. Last year's mark-up of $45.8 million provides for conversion of 29 of the 87 ARNG AH-1G's to AH-1S's. Additional funding will be required for conversion of the remaining AH-1G's and additional procurement of AH-64's. However, the Army's aviation program has been structured for total Army modernization and aimed at attaining a proper balance of planned aircraft.

Senator BINGAMAN. The National Guard Bureau has requested that simulators and training devices be developed for use by the Guard at their home station armories. What steps are the Army and the DOD planning to undertake to fill Army Guard armory simulator and training device needs? Specifically, would you support a $2 million add-on for R&D in fiscal year 1985 to develop artillery and armor crew training simulators?

General PEIXOTTO. The Army includes the National Guard in the distribution plans of all new training devices and simulators. The Artillery Training Set Fire Observation (TSFO) simulator is being fielded simultaneously to active and reserve components. When the Closed Loop Artillery Battery Trainer components are issued, parallel distribution will again take place. In the armor devices arena, 85 percent of the Army's MK60 video disc trainers—ideally suited for armory use—will be issued to the National Guard. They will also receive the new Video Interactive Gunnery Simulator (VIGS) before the Active Army. The Armor proponent school at Fort Knox is currently working with the National Guard Bureau in the formulation of a distribution plan for the Tank Gunnery and Missile Tracking System (TGMTS), while Reserve units scheduled to receive the M1 tank will also gain the new Unit Conduct of Fire Trainer (UCOFT). As active Army units transition to the M1 and transfer their M60A3 tanks to the Reserve Components, their M60A3 UCOFTs will be transferred as well. In view of this effort to supply Army standardized devices to the Total Force, it is unnecessary and redundant for the National Guard to develop its own family of unique training simulators.

Senator BINGAMAN. Do you support a $9.5 million request for attack helicopter flight and weapons simulators for the Army National Guard?

General PEIXOTTO. The fiscal year 1985 President's Budget includes $34.8 million for two attack helicopter flight simulators for the National Guard. They will be based at Indiantown Gap, Pennsylvania, and Phoenix, Arizona. An additional $9.5 million is not required. It represents the amount deleted from the fiscal year 1984 budget submission that was originally earmarked for procurement of the long-lead items in support of this action. Intra-program rescheduling and delay of computer improvements within the AH-1 flight weapons simulator program until 1987 provided funds for procurement of these required long-lead items.

Senator GOLDWATER. Without objection, the meeting will stand adjourned.

[Whereupon, at 11:40 a.m., the subcommittee was adjourned.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1985

WEDNESDAY, MARCH 7, 1984

U.S. Senate,
Subcommittee on Tactical Warfare,
Committee on Armed Services,
Washington, D.C.

NAVY/MARINE CORPS TACTICAL PROGRAMS

The subcommittee met, in executive session, pursuant to notice, at 1:55 p.m., in room SR-222, Russell Senate Office Building, Hon. Barry Goldwater (chairman) presiding.

Present: Senators Goldwater, Warner, Wilson, Kennedy, Bingaman, and Dixon.

Staff present: William E. Hoehn, Jr., Carl M. Smith, James C. Smith III, John G. Campbell, professional staff members; and Tamara L. Farnsworth, staff assistant.

Also present: Gerald J. Smith, assistant to Senator Goldwater; Les Brownlee, assistant to Senator Warner; Mark J. Albrecht, assistant to Senator Wilson; James Steinberg, assistant to Senator Kennedy; and Charles C. Smith, Jr., assistant to Senator Dixon.

OPENING STATEMENT BY SENATOR BARRY GOLDWATER, CHAIRMAN

Senator Goldwater. The committee will come to order.

The Tactical Warfare Subcommittee meets this afternoon to receive testimony on the Navy and Marine Corps fiscal year 1985 budget request for tactical programs.

We are pleased to welcome Vice Adm. Robert F. Schoultz, Deputy Chief of Naval Operations for Air Warfare, and Lt. Gen. William H. Fitch, Deputy Chief of Staff for Aviation for the Marine Corps.

We are also pleased to welcome Vice Adm. James B. Busey, Commander of the Naval Air Systems Command.

I want to say first that I am happy to see that the Navy has taken to heart the concern this committee has repeatedly expressed over what was a steadily growing number of Navy aircraft procurement lines. Last year the Navy projected 20 lines in the fiscal 1985 budget—but in the request that has been submitted there are 16. I hope we can expect continued progress in this area.

There are a great many issues in which this subcommittee is interested and I hope our limited time this afternoon will permit us to explore each of them in some detail. The future of the A-6 is of paramount interest, as is the composition of future carrier airwings, the JVX, VTX, F-14 reengining, spare parts funding, and overall airwing readiness, to name just a few.

I don't think you need any warning about the Budget Committee. While we have not seen their final figures yet, we have seen enough to know that they are very serious about drastic cuts in the defense budget. I think they are far, far too drastic. I think we can live with a smaller budget than the President projected, but I don't, frankly, think we can exist with the figures that I have seen in the budget.

I have to warn you that this subcommittee, with its responsibility to the overall problem of deficit financing, will do what it can to get the cost of your readiness down. I don't like it any more than you do, but that is the way the ball bounces.

Vice Admiral Schoultz, we will ask you to start. If you have prepared texts, and I believe you have, you can insert them in the record to be printed as if read and you can proceed to brief us.

Admiral fire away.

[The prepared statement of Admiral Schoultz follows:]

PREPARED STATEMENT OF VICE ADM. ROBERT F. SCHOULTZ, DEPUTY CHIEF OF NAVAL OPERATIONS (AIR WARFARE)

Mr. Chairman and distinguished Members of Congress: I am honored to be here today to present the fiscal year 1985 Navy Aircraft Procurement Program. I am accompanied by Lieutenant General Fitch, Marine Corps Deputy Chief of Staff for Aviation, and Vice Admiral Busey, Commander Naval Air Systems Command.

We think it is more important than ever that the vitality of the Navy-Marine Corps TACAIR aviation team be maintained. National commitments require that our forces be deployed to protect U.S. interests around the world in peacetime and be prepared to respond at any level in conflict. The ability of Navy-Marine Corps aviation to respond with action in crisis situations and by mere presence has been amply demonstrated in Central America, Grenada, and Lebanon over the past year.

Our budget request for fiscal year 1985 is designed to strengthen air warfare in the Department of the Navy and represents a considered balance of competing priorities. The requested procurements do not meet every requirement but I am convinced that our budget request will achieve the highest level of effectiveness within the constraints of fiscal reality.

We have allocated Naval Aviation's resources to the four central elements of force effectiveness: Readiness, sustainability, modernization and force levels. These factors must interact to achieve the greatest advantage for Naval aviation. Over the past several years we have made significant improvements in each of these four categories and plan to continue that trend in the future.

In the area of readiness, our overall goal is to achieve a force level Aircraft Mission Capable [MC] rate of 70 percent. Our readiness trends are moving positively in that direction. We averaged 66 percent MC in fiscal year 1983 and forecast 67 percent in fiscal 1984. With continued congressional support for our repairable and spare parts requests we should achieve the 70 percent MC goal in fiscal year 1985.

The prime elements of material readiness are aviation spares and aircraft depot rework. The fiscal year 1985 budget shows a decrease in spares and component rework funding from the fiscal year 1984 level. This is because procurement and repair lead time responsibility for these accounts has been transferred to the Navy Stock Fund in fiscal year 1985. Stock funding of Aviation Depot Level Repairables will improve both readiness and sustainability. Readiness increases are also anticipated due to the recently approved Aircraft Service Period Adjustment [ASPA] program which will base our airframe rework requirements on the specific material condition of each aircraft as opposed to the average condition of all of that type aircraft. Also contributing to readiness improvement is the Navy's increased investment in aircraft support equipment, which becomes more vital as we build toward 15 deployable carriers and the requisite air wings which will operate from them. Specifically our fiscal year 1985 request includes the aircraft support equipment required for U.S.S. *Theodore Roosevelt* (CVN-71), which will be delivered in fiscal year 1987.

Sustaining our carriers in global operations is an important part of the effectiveness equation. As Secretary Lehman pointed out in his posture statement the formula for sustaining day-to-day operations is based on identifying those commodities which are "war stoppers." Shortages for sustained operations have been identified and we are taking positive steps to address those stockpile, parts and support deficiencies. Over the past 3 years investments in spare parts, weapons, aircraft maintenance and support equipment have increased substantially. Eight of our 13 carriers can be deployed today fully equipped and capable of sustained operations. The funding requested in the fiscal year 1985 budget for these high priority requirements is necessary to achieve our sustainability objectives and fully outfit out 15 carriers as they are delivered.

We have a pressing modernization requirement as the threat to naval aviation forces continues to grow while the age of our tactical air force also increases. The introduction of the F/A-18 into Navy and Marine Corps fleet operations and the Marine Corps AV-8B Harrier program will positively address those two modernization problems.

The Navy has made the decision to modernize its F-14 Tomcat aircraft in lieu of developing a new fighter platform. The F-14 Tomcat will be upgraded with modern technology engines and advanced avionics. We expect that competition, commonality of software/hardware, and increased reliability and maintainability [R&M] will yield substantial life cycle cost savings. The upgrade to the A-6E is in direct support of the recommendations of the recent All Weather Strike Aircraft Study.

The Department of the Navy has the lead in a major joint USN/USAF research and development effort—the JVX program. Preliminary design work is underway and we anticipate a full scale development go ahead in 1985. The JVX will provide a modern platform for USMC medium assault lift, Navy combat search and rescue (SAR) plus other support missions.

I would like to update the members of this committee on the status of another major modernization initiative—VTXTS. As Congress directed, the T-45 Training System has been restructured and includes carrier capable aircraft only. The single phase program is being built around the following essential requirements: an early IOC to preclude shortfalls in training aircraft inventories; the advantage of derivative technology to ensure a cost effective R&D funding profile; a procurement schedule which is executable; and an APN funding profile which is affordable. The program is currently in the final stages of review within DOD.

We continue to stress upgrading our existing tactical assets through the Aircraft Modification Program, funded under Budget Activity 5. Major initiatives include reliability and capability improvements to the F-14, A-6, EA-6B and E-2C and AH-1T aircraft. Upgrading common Electronic Counter Measures (ECM) equipment will provide significant R&M and mission effectiveness improvements which are essential to the survival of our TACAIR assets in a hostile environment.

In the area of weapons modernization, the introduction of the High Speed Anti-Radiation Missile [HARM] in combination with the Skipper, Maverick and Harpoon will significantly improve our standoff attack capability. In fiscal year 1985, we will introduce the Phoenix (AIM-54C) missile with its greatly improved ability to defeat the enemy in the Outer Air Battle.

Hand-in-hand with these advances in the active aviation force are initiatives to modernize the Naval Reserve. Transition of reserve squadrons to the fleet compatible A-7E and E-2C aircraft has begun. The reserves will man their first F/A-18 squadron this year and F-14 reserve introduction is planned to begin this year also.

As we build force levels toward the 600 ship Navy and the necessary aviation assets to support that growth we must carefully balance our procurement program. It is well documented that we are not acquiring aircraft in sufficient quantities to attain our force structure goals without increasing the age of our force. Affordability is the crucial issue and substantial progress has been made in aircraft procurement cost reductions. Program cost growth has been reversed and we will continue to stress cost reduction in future contractual agreements.

In each budget we must assess tradeoffs between force requirements and affordability. This necessitates a careful scrutiny of the number of aircraft production lines and possible ways to reduce that number. We make every attempt to procure an aircraft over the shortest practical period as evidenced by the selective buy out programed for TH-57, T-34, T-44, AH-1T, UC-12 and C-2 aircraft.

Production lines for tactical combat aircraft must be kept open for the next several years as we build our force levels. The 13th and 14th air wings associated with the new carrier deliveries need to be outfitted with first line aircraft over the FYDP years. The modernization of USMC air wings in the close air support role requires near term continued procurement of the AV-8B and F/A-18. A final factor which influences the number of production lines is the total force concept of horizontal integration of reserve forces with current and carrier compatible aircraft. This is a vital requirement since the 15th deployable CV will be outfitted with a reserve air wing.

Current research and development efforts are leading more toward multimission aircraft such as the JVX and continued emphasis in this direction will further reduce the number of procurement budget lines. From 16 lines in fiscal year 1985, we will go to 14 in 1986, 12 in 1987 and 11 in 1989. I recognize your concern over this issue and the Navy is working to reduce the number of production lines in the future.

We have already demonstrated that multiyear procurement [MYP] in aviation programs can attain savings. Congress approved MYP for the C-2A aircraft in fiscal year 1982 and savings of over $90 million are projected over the buy of 39 aircraft. The fiscal year 1985 budget requests approval of the CH/MH-53E for multiyear procurement. In addition to providing significant savings the program meets the following criteria for MYP: a high degree of cost confidence based on seven prior years of CH-53E procurements, a validated requirement, stable funding and a stable configuration. MYP savings of $130 million will be realized when compared to annual procurement of the CH/MH-53E.

The current budget requests procurement of 287 aircraft, a modest increase over the level of the fiscal year 1984 request. Last year we asked for 281 aircraft and received appropriation for 232. As the CNO has stated, "the number of aircraft requested is slightly below that required to provide adequate force levels without suffering any increase in overall force age." I solicit your support for our total procurement requested in order to achieve 15 deployable carriers and 14 active duty deployable airwings.

The fiscal year 1985 request supports a complement of formidable aircraft that provide the capabilities to assure the achievement of control of the seas and projection of power ashore. The F-14 Tomcat is still the most capable fleet air defense fighter of the Free World. The A-6 Intruder provides a long range all-weather, medium attack capability second to none. With the addition of the F/A-18 Hornet which complements both the F-14 and A-6, we gain vastly increased flexibility to perform both fighter and strike missions, making the Carrier Battle Group [CVBG] much stronger, both offensively and defensively.

As the Navy gains experience in operating F/A-18 aircraft, we see it developing as the core around which to construct the power projection capability of the carrier battle group. It will serve as fighter escort, thereby freeing F-14s for the outer air battle; perform SAM and AAA suppression; conduct interdiction strikes; and provide close air support and airborne tactical reconnaissance. The force multiplier effect of the F/A-18 is an important aspect that offers increased effectiveness to carrier battle groups and Marine air wings.

The Navy plans to deploy aircraft carriers in both fleets with various air wing compositions to gain valuable operational data on the effectiveness of revised air wings. U.S.S. *Kennedy* has deployed with an air wing comprised of A-6Es and F-14s; U.S.S. *Constellation* will operate with A-6Es, F-14s, and F/A-18s; and U.S.S. *Midway* and U.S.S. *Coral Sea* will be outfitted with A/6s and four squadrons each of F/A18s. All carriers will retain a normal deck multiple of support aircraft. Each of these air wings has particular strengths and limitations that must be considered in tactical planning. As the results come in we will be evaluating the best blend of individual aircraft types in the carrier air wing for maximum effectveness. Any changes will be evolutionary. Our air wing force level requirements are paramount. The quality of aircraft requested in fiscal year 1985 will not be affected.

Our front line attack and fighter aircraft will be supported by KA-6D tankers, early warning EP2C Hawkeyes, electronic jamming EA-6B Prowlers, reconnaissance equipped aircraft, and replenished by our improved C-2A carrier-onboard-delivery (COD) aircraft. We continue to put to sea a force capable of convincing potential adversaries that we can fight and win.

I will now review each major USN-USMC tactical procurement program in the fiscal year 1985 budget.

A-6E INTRUDER

The A-6E is the Navy's only all weather attack aircraft. It incorporates a solid state weapon release system, a single integrated track and search radar, and a Carrier Airborne Inertial Navigation System [CAINS]. The radar has a moving target indicating system. The A-6E can also provide pathfinder/strike leader functions for visual attack planes when required.

An added capability, Target Recognition Attack Multisensor (TRAM), has been procured since fiscal year 1976. This major subsystem of the A-6E is procured under a multiyear production contract. This system, which includes an infrared sensor, laser ranger/designator and laser receiver, provides for delivery of laser guided weapons and increased night surveillance and identification capability.

The A-6E inventory as of 1 January 1984 is 346 with 23 aircraft funded and undelivered. The procurement cost through the Budget year is $2,760.4 million. The fiscal year 1985 request includes $214.6 million for the production of 6 aircraft. The recurring flyaway cost of the A-6E is $23.9 million.

EA-6B PROWLER

The EA-6B is a four place derivation of the A-6 attack aircraft. It is equipped with a computer controlled electronic surveillance and control system and up to eleven high power jamming transmitters in various frequency bands depending on the particular mission. The EA-6B is powered by J52-P-408 engines and has a takeoff weight of 58,600 lbs.

The EA-6B's primary mission is the suppression and degradation of enemy defense systems by tactical jamming of enemy electronic activity. Secondary missions include passive early warning for fleet defense and battlefield electronic surveillance.

The EA-6B inventory as of 1 January 1984 is 72 with 18 aircraft funded and undelivered. The procurement cost through the budget is $3,587.6 million. The fiscal year 1985 request includes $379.6 million for the production of 6 aircraft and advance procurement for 6 aircraft in fiscal year 1986. The recurring flyaway cost of the EA-6B is $26.3 million.

AV-8B HARRIER

The AV-8B is an improved vectored thrust V/STOL aircraft based on the AV-8A concept and the Pegasus 11 engine that has up to twice the range or payload of the older Harrier. It combines aerodynamic improvements with the Angle Rate Bombing System for increased weapon delivery accuracy and a new stability augmentation system to reduce pilot workload providing a more capable and reliable light attack aircraft. The AV-8B will meet the Marine Corps requirement for a light attack aircraft to provide responsive offensive air power that can operate from auteree forward sites in direct support of ground forces.

The AV-8B inventroy as of 1 January 1984 is 6 with 59 funded and undelivered. The procurement cost through the budget year is $3,493.0 million. The fiscal year 1985 request includes $822.6 million for the production of 32 aircraft and advance procurement for 46 aircraft in fiscal year 1986. The recurring flyaway cost of the AV-8B is $18.3 million.

F-14A TOMCAT

The F-14A is a high performance, air superiority/fleet air defense fighter capable of air-to-air combat. It is a two-place, tandem seat, variable sweep wing, supersonic, carrier-based airborne weapon system. The F-14 has visual attack and all-weather capability to deliver Phoenix and Sparrow missiles using the AWG-9 weapon control system. It also employs the M-61 gun and Sidewinder missiles for close-in air-to-air combat. Titanium is utilized to minimize weight. The F-14 is powered by twin TF30-P-414A engines. A major upgrade of the F-14 aircraft is planned for production incorporation in fiscal year 1988. The upgrade enhances operational capability with improvements in electronic counter-counter measures in the radar, digital avionics suite and improved engine performance and reliability.

The F-14A inventory as of 1 January 1984 is 410 with 56 aircraft funded and undelivered. The procurement cost through the budget year is $12,390.6 million. The fiscal year 1985 request includes $976.9 million for the production of 24 aircraft and advance procurement for 24 aircraft in fiscal year 1986. The recurring flyaway cost of the F-14A is $32.7 million.

F/A-18 HORNET

The F/A-18 Naval Strike Fighter is a twin-engine, mid-wing, multi-mission tactical aircraft. The F/A-18 is employed in both Navy and Marine Corps squadrons. Tactical reconnaissance kits and two-seat trainer versions are also planned. The F/A-18 can be missionized through selected use of external equipment to accomplish specific fighter or attack missions. This commonality provides the operational commander more flexibility in employing his tactical aircraft in a dynamic scenario.

The primary design mission for the F/A-18 is as a strike fighter which includes the traditional fighter applications, such as fighter escort and fleet air defense, combined with the traditional attack applications, such as interdiction and close air support. Since for attack missions the same airframe, engine and flight control systems are used as for fighter missions, excellent fighter and self-defense capabilities are inherent in all attack missions.

The F/A-18 inventory as of 1 January 1984 is 119 with 215 aircraft funded and undelivered. The procurement cost through the budget year is $14,296.8 million. The fiscal year 1985 request includes $2,686.0 million for the production of 84 aircraft and advance procurement for 102 aircraft in fiscal year 1986. The recurring flyaway cost of the F/A-18 is $21.0 million.

CH/MH-53E SUPER STALLION

The CH-53E is a 3-engine helicopter designed to lift 16 tons. It has a 79-foot main rotor diameter, 7 titanium spar main rotor blades, 20-foot tail rotor diameter canted 20 degrees, and a main gearbox qualified to 13,140 shaft horsepower.

The CH-53E is a shipboard compatible, heavy transport helicopter configured for both Marine and Navy missions. Marine missions include amphibious/heliborne assault providing for lift and movement of cargo and troops, and heavy lift shore operational requirements including tactical recovery of downed or damaged aircraft and equipment. Navy missions include Vertical Onboard Delivery [VOD] and Airborne Mine Countermeasures [AMCM]. The MH-53E variation of the CH-53E is to be procured beginning in fiscal year 1985. The MH-53E will have significantly enhanced AMCM capability over the presently deployed RH-53D. AMCM associated improvements will also enhance the aircraft's facility to perform utility and special missions by significantly increasing improvements will also be incorporated in the CH version of the 53E helicopter beginning in fiscal year 1986.

The CH-53E inventory as of 1 January 1984 is 63 with 20 aircraft funded and undelivered. The procurement cost through the budget year is $1,730.3 million. The fiscal year 1985 request includes $292.9 million for the production of 10 aircraft, 8 CH-53Es and 2MH-53Es. The advance procurement for 14 aircraft in fiscal year 1986 reflects an airframe multiyear procurement strategy. The recurring flyway cost of the CH/MH-53E is $15.8 million.

AH-1T SEA COBRA

The AH-1T is a tandem seat, two place (pilot and gunner/copilot) attack helicopter designed and built to provide the high speed and maneuverability required by the attack mission. Maximum take-off weight is 14,000 pounds. The armament on the AH-1T includes the Sidewinder, Tow and Hellfire missile systems, a chin-mounted 20 MM turret gun, and a wide variety of forward firing and droppable external stores.

The AH-1T is a helicopter gunship whose mission is the enroute escort and protection of troop assault helicopters, landing zone preparation immediately prior to the arrival of assault helicopters, landing zone fire suppression during the assault phase, and fire support during ground escort operations. With the incorporation of the Tow and Hellfire missile systems, the AH-1T has additionally been tasked with the mission of enemy armor destruction, which requires operation both at sea level and in a high/hot environment.

The AH-1T inventory as of 1 January 1984 is, 46 with no aircraft funded and undelivered. The procurement cost through the budget year is $519.9 million. The fiscal year 1985 request includes $193.0 million for the production of 22 aircraft and advance procurement for 22 aircraft in fiscal year 1986. The recurring flyway cost of the AH-1T is $6.7 million.

E-2C HAWKEYE

The E-2C is an all weather, carrier-based, airborne early warning aircraft. It carries a crew of five: pilot, co-pilot, combat information center officer, air control officer, and flight technician. The E-2C has a high wing, a 24-foot rotodome mounted above the fuselage and is powered by two T56-A-425 turbo-prop engines.

The E-2C extends task force defense perimeters by providing early warning of approaching enemy units and by vectoring interceptors into attack position. In addition to this function, the Hawkeye also provides strike and air traffic control, radar surveillance, search and rescue assistance, communications relay, and automatic tactical data exchange.

The E-2C inventory as of 1 January 1984 is 73 with 12 aircraft funded and undelivered. The procurement cost through the budget year is $3,192.9 million. The fiscal year 1985 request includes $341.8 million for the production of 6 aircraft and advance procurement for 6 aircraft in fiscal year 1986. The recurring flyaway cost of the E-2C is $35.2 million.

AIM-54C PHOENIX

Phoenix is a supersonic, all-weather, long range air-to-air missile with semi-active mid-course and active terminal guidance and long range (+60 nautical miles) stand-off capability. The AIM-54C is the improved version of the AIM-54A and is in the sixth production run of the series. Six Phoenix missiles can be carried aboard the F-14 aircraft. The AIM-54 seeks destruction of enemy aircraft/missiles, and is capable of near simultaneous launch against six targets in an all-weather, heavy jamming environment.

The AIM-54C inventory as of 1 January 1984 is 82 with 483 missiles funded and undelivered. The procurement cost through the budget year is $1,470.4 million. The fiscal year 1985 request includes $443.8 million for the production of 400 missiles and advance procurement for 567 missiles in fiscal year 1986. The recurring flyaway cost of the AIM-54C is $.892 million.

AGM-88A HARM

Harm, an air-to-surface anti-radiation missile [ARM] is the successor to the Shrike and Standard Arm and will ultimately replace both in the Navy inventory. Harm characteristics include software flexibility, inflight retargeting, high speed, large launch envelope, wide band coverage in a single head, high sensitivity, and compatibility with various Navy and Air Force tactical aircraft.

The missile is designed to destroy or effectively suppress land and sea based radar equipment which direct air defense artillery and surface-to-air missiles. The Navy plans Harm deployment with A-7E, A-6E, and F/A-18 aircraft.

The AGM-88A inventory as of 1 January 1984 is 80 with 663 missiles funded and undelivered. The procurement cost through the budget year is $833.8 million. The fiscal year 1985 request includes $309.7 million for the production of 803 missiles. The recurring flyaway cost of the AGM-88A is $.333 million.

The goal of Naval-Marine Corps Aviation is to build a credible force which employs tactics and strategies which enable us to fight intelligently and effectively. That includes not only ensuring a strong, capable air arm, but a functional and practiced interoperability with our sister services which provides ever increasing capabilities in combined arms efforts. With your continued support, we shall ensure our ability to attain and sustain that goal.

[Supplemental information to Admiral Schoultz' prepared statement follows:]

A-6E INTRUDER

MANUFACTURERS

AIRFRAME	ENGINE
GRUMMAN AEROSPACE CORP. BETHPAGE, L. I., N.Y.	UNITED AIRCRAFT CORP. PRATT & WHITNEY DIV. E. HARTFORD, CONN.

FY 85 REQUEST

QUANTITY 6

WEAPONS SYSTEM COST	$ 214.6 M
RECURRING FLYAWAY	$ 143.6 M
NON RECUR/ANCILLARY	20.3
SUPPORT	61.7
ADV PROC (PRIOR YR)	-11.0
ADV PROC (CURR YR)	–
INITIAL SPARES	$ 43.3 M
TOTAL PROCUREMENT COST	$ 257.9 M

UNIT COST

$ 23.9 M
RECURRING FYAWAY

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
346	23	$ 2,760.4 M

EA-6B PROWLER

MANUFACTURERS

AIRFRAME	ENGINE
GRUMMAN AEROSPACE CORP. BETHPAGE, L.I., N.Y.	UNITED AIRCRAFT CORP. PRATT & WHITNEY DIV. E. HARTFORD, CONN.

FY 85 REQUEST

QUANTITY 6

WEAPONS SYSTEM COST	$ 379.6 M
RECURRING FLYAWAY	$ 157.7 M
NON RECUR/ANCILLARY	54.1
SUPPORT	172.8
ADV PROC (PRIOR YR)	-23.6
ADV PROC (CURR YR)	18.6
INITIAL SPARES	$ 16.2 M
TOTAL PROCUREMENT COST	$ 395.8 M

UNIT COST

$ 26.3 M
RECURRING FYAWAY

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
72	18	$ 3,587.6 M

AV-8B HARRIER

MANUFACTURERS

AIRFRAME	ENGINE
McDONNELL DOUGLAS CORP. ST. LOUIS, MO.	ROLLS ROYCE LTD. BRISTOL, U.K.

QUANTITY 32

FY 85 REQUEST

WEAPONS SYSTEM COST	$ 822.6 M
RECURRING FLYAWAY	$ 586.3 M
NON RECUR/ANCILLARY	29.8
SUPPORT	224.5
ADV PROC (PRIOR YR)	-98.4
ADV PROC (CURR YR)	80.4
INITIAL SPARES	$ 117.2 M
TOTAL PROCUREMENT COST	$ 939.8 M

UNIT COST $ 18.3 M RECURRING FYAWAY

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
6	59	$ 3,493.0 M

F-14A TOMCAT

MANUFACTURERS

AIRFRAME	ENGINE
GRUMMAN AEROSPACE CORP. BETHPAGE, L.I., N.Y.	UNITED AIRCRAFT CORP. PRATT & WHITNEY DIV. E. HARTFORD, CONN.

QUANTITY 24

FY 85 REQUEST

WEAPONS SYSTEM COST	$ 976.9 M
RECURRING FLYAWAY	$ 785.8 M
NON RECUR/ANCILLARY	30.9
SUPPORT	149.0
ADV PROC (PRIOR YR)	-178.8
ADV PROC (CURR YR)	190.0
INITIAL SPARES	$ 8.9 M
TOTAL PROCUREMENT COST	$ 985.8 M

UNIT COST $ 32.7 M RECURRING FYAWAY

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
410	56	$ 12,390.6 M

F/A-18 HORNET

MANUFACTURERS

AIRFRAME	ENGINE
McDONNELL DOUGLAS CORP. ST. LOUIS, MO.	GENERAL ELECTRIC CO. WEST LYNN, MASS.

FY 85 REQUEST

QUANTITY

84

WEAPONS SYSTEM COST	$ 2,686.0 M
RECURRING FLYAWAY	$ 1,767.0 M
NON RECUR/ANCILLARY	203.1
SUPPORT	596.4
ADV PROC (PRIOR YR)	-218.4
ADV PROC (CURR YR)	337.9
INITIAL SPARES	$ 111.6 M
TOTAL PROCUREMENT COST	$ 2,797.6 M

UNIT COST

$ 21.0 M

RECURRING FYAWAY

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
119	215	$ 14,296.8 M

CH-53E SUPER STALLION (MYP)

MANUFACTURERS

AIRFRAME	ENGINE
SIKORSKY AIRCRAFT DIV. STRATFORD, CONN.	GENERAL ELECTRIC CO. WEST LYNN, MASS.

FY 85 REQUEST

QUANTITY

10

WEAPONS SYSTEM COST	$ 292.9 M
RECURRING FLYAWAY	$ 157.7 M
NON RECUR/ANCILLARY	25.3
SUPPORT	46.9
ADV PROC (PRIOR YR)	-6.6
ADV PROC (CURR YR)	69.6
INITIAL SPARES	$ 27.6 M
TOTAL PROCUREMENT COST	$ 320.5 M

UNIT COST

$ 15.8 M

RECURRING FYAWAY

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
63	20	$ 1,730.3 M

AH-1T SEA COBRA

MANUFACTURERS

AIRFRAME	ENGINE
BELL HELICOPTER FORT WORTH, TEXAS	GENERAL ELECTRIC LYNN, MASS

FY 85 REQUEST

QUANTITY
22

WEAPONS SYSTEM COST $ 193.0 M

RECURRING FLYAWAY	$	147.2 M
NON RECUR/ANCILLARY		9.1
SUPPORT		39.5
ADV PROC (PRIOR YR)		−17.8
ADV PROC (CURR YR)		15.0

INITIAL SPARES $ 21.4 M

TOTAL PROCUREMENT COST $ 214.4 M

UNIT COST
$ 6.7 M
RECURRING FYAWAY

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
46	-	$ 519.9 M

SH60B LAMPS MK III

MANUFACTURERS

AIRFRAME	ENGINE
UNITED TECHNOLOGIES CORP. SIKORSKY AIRCRAFT DIVISION, STRATFORD, CONN.	GENERAL ELECTRIC CO., LYNN, MASS.

FY 85 REQUEST

QUANTITY
18

WEAPONS SYSTEM COST $ 385.6 M

RECURRING FLYAWAY	$	273.1 M
NON RECUR/ANCILLARY		2.1
SUPPORT		116.8
ADV PROC (PRIOR YR)		-58.8
ADV PROC (CURR YR)		52.4

INITIAL SPARES $ 95.7 M

TOTAL PROCUREMENT COST $ 481.3 M

UNIT COST
$ 15.2 M
RECURRING FYAWAY

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
9	62	$ 2,613.1 M

P-3C ORION

MANUFACTURERS

AIRFRAME	ENGINE
LOCKHEED AIRCRAFT CORP. BURBANK, CA	GENERAL MOTORS CORP. ALLISON DIV. INDIANAPOLIS, IND.

FY 85 REQUEST

QUANTITY: 9

WEAPONS SYSTEM COST: $ 465.0 M

RECURRING FLYAWAY	$ 342.7 M
NON RECUR/ANCILLARY	-
SUPPORT	120.6
ADV PROC (PRIOR YR)	-84.4
ADV PROC (CURR YR)	86.1

INITIAL SPARES: $ 18.3 M

TOTAL PROCUREMENT COST: $ 483.3 M

UNIT COST: $ 38.1 M RECURRING FYAWAY

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
	14	$ 4,938.0 M

E-2C HAWKEYE

MANUFACTURERS

AIRFRAME	ENGINE
GRUMMAN AEROSPACE CORP. BETHPAGE, L.I, N.Y.	DETROIT DIESEL ALLISON DIV. GENERAL MOTORS CORP. INDIANAPOLIS, IND.

FY 85 REQUEST

QUANTITY: 6

WEAPONS SYSTEM COST: $ 341.8 M

RECURRING FLYAWAY	$ 210.9 M
NON RECUR/ANCILLARY	24.2
SUPPORT	102.7
ADV PROC (PRIOR YR)	-25.6
ADV PROC (CURR YR)	29.6

INITIAL SPARES: $ 23.2 M

TOTAL PROCUREMENT COST: $ 365.0 M

UNIT COST: $ 35.2 M RECURRING FYAWAY

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
73	12	$ 3,192.9 M

SH-2F SEASPRITE

MANUFACTURERS

AIRFRAME	ENGINE
KAMAN AEROSPACE BLOOMFIELD, CT.	GENERAL ELECTRIC LYNN, MASS.

FY 85 REQUEST

QUANTITY			UNIT COST
6	WEAPONS SYSTEM COST	$ 65.9 M	
	RECURRING FLYAWAY	$ 58.1 M	$ 9.7 M RECURRING FYAWAY
	NON RECUR/ANCILLARY	2.7	
	SUPPORT	9.6	
	ADV PROC (PRIOR YR)	-4.5	
	ADV PROC (CURR YR)	-	
	INITIAL SPARES	$ 4.1 M	
	TOTAL PROCUREMENT COST	$ 70.0 M	

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
87	42	$ 497.0 M

C-9B

MANUFACTURERS

AIRFRAME	ENGINE

FY 85 REQUEST

QUANTITY			UNIT COST
TBD	WEAPONS SYSTEM COST	$ 33.9 M	
	RECURRING FLYAWAY	$ 32.0 M	$ TBD M RECURRING FYAWAY
	NON RECUR/ANCILLARY	–	
	SUPPORT	1.9	
	ADV PROC (PRIOR YR)	–	
	ADV PROC (CURR YR)	–	
	INITIAL SPARES	$ 6.1 M	
	TOTAL PROCUREMENT COST	$ 40.0 M	

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
19	-	$ 193.7 M

TH-57 SEA RANGER

MANUFACTURERS

AIRFRAME	ENGINE
BELL HELICOPTER TEXTRON FT. WORTH, TEXAS	CONTRACTOR FURNISHED

FY 85 REQUEST

QUANTITY			UNIT COST
36	WEAPONS SYSTEM COST	$ 24.4 M	$ .6 M RECURRING FYAWAY

RECURRING FLYAWAY	$ 23.2 M
NON RECUR/ANCILLARY	-
SUPPORT	1.2
ADV PROC (PRIOR YR)	-
ADV PROC (CURR YR)	-
INITIAL SPARES	$ - M
TOTAL PROCUREMENT COST	$ 24.4 M

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
117	21	$ 126.2 M

C-2A GREYHOUND (MYP)

MANUFACTURERS

AIRFRAME	ENGINE
GRUMMAN AEROSPACE CORP. BETHPAGE, L.I., N.Y.	GENERAL MOTORS CORP. ALLISON DIV. INDIANAPOLIS, IND.

FY 85 REQUEST

QUANTITY			UNIT COST
8	WEAPONS SYSTEM COST	$ 185.4 M	$ 18.7 M RECURRING FYAWAY

RECURRING FLYAWAY	$ 149.4 M
NON RECUR/ANCILLARY	—
SUPPORT	34.9
ADV PROC (PRIOR YR)	−40.2
ADV PROC (CURR YR)	41.2
INITIAL SPARES	$ 13.4 M
TOTAL PROCUREMENT COST	$ 198.8 M

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
12	14	$ 789.7 M

ADVERSARY

MANUFACTURERS

AIRFRAME	ENGINE

FY 85 REQUEST

QUANTITY	UNIT COST
8	$ 8.3 M RECURRING FYAWAY

WEAPONS SYSTEM COST	$ 66.8 M
RECURRING FLYAWAY	$ 66.4 M
NON RECUR/ANCILLARY	-
SUPPORT	0.4
ADV PROC (PRIOR YR)	-
ADV PROC (CURR YR)	-
INITIAL SPARES	$ 6.3 M
TOTAL PROCUREMENT COST	$ 73.1 M

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
–	4	$ 105.0 M

UC-12B

MANUFACTURERS

AIRFRAME	ENGINE
BEECH AIRCRAFT CORP. WITCHITA, KANSAS	

FY 85 REQUEST

QUANTITY	UNIT COST
12	$ 2.6 M RECURRING FYAWAY

WEAPONS SYSTEM COST	$ 32.0 M
RECURRING FLYAWAY	$ 30.8 M
NON RECUR/ANCILLARY	1.0
SUPPORT	.2
ADV PROC (PRIOR YR)	–
ADV PROC (CURR YR)	–
INITIAL SPARES	$ – M
TOTAL PROCUREMENT COST	$ 32.0 M

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
65	–	$ 104.8 M

DEPARTMENT OF THE NAVY UNITED STATES OF AMERICA

SPARROW (AIM/RIM-7M)

MANUFACTURERS

AIRFRAME	**ENGINE**
RAYTHEON, LOWELL, MA	HERCULES
GENERAL DYNAMICS, POMONA, CA	CUMBERLAND, MD

FY 85 REQUEST

QUANTITY

1,250

WEAPONS SYSTEM COST $ 253.9 M

RECURRING FLYAWAY	$ 237.2 M
NON RECUR/ANCILLARY	–
SUPPORT	16.7
ADV PROC (PRIOR YR)	–
ADV PROC (CURR YR)	–

INITIAL SPARES $ 2.5 M

TOTAL PROCUREMENT COST $ 256.4 M

UNIT COST

$ .190 M

RECURRING FYAWAY

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
17	2505	$ 836.0 M

DEPARTMENT OF THE NAVY UNITED STATES OF AMERICA

SIDEWINDER (AIM-9M)

MANUFACTURERS

AIRFRAME	**ENGINE**
RAYTHEON, LOWELL, MA	
FORD AEROSPACE, NEWPORT BEACH CA.	

FY 85 REQUEST

QUANTITY

1,000

WEAPONS SYSTEM COST $ 68.6 M

RECURRING FLYAWAY	$ 59.9 M
NON RECUR/ANCILLARY	5.0
SUPPORT	3.7
ADV PROC (PRIOR YR)	–
ADV PROC (CURR YR)	–

INITIAL SPARES $ 2.6 M

TOTAL PROCUREMENT COST $ 71.2 M

UNIT COST

$ .060 M

RECURRING FYAWAY

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
233	1688	$ 236.0 M

PHOENIX (AIM-54C)

AIRFRAME **MANUFACTURERS** ENGINE

HUGHES AIRCRAFT
CULVER CITY , CA

QUANTITY **FY 85 REQUEST** **UNIT COST**

QUANTITY			UNIT COST
400	WEAPONS SYSTEM COST	$ 443.8 M	$ .892 M RECURRING FYAWAY
	RECURRING FLYAWAY	$ 356.6 M	
	NON RECUR/ANCILLARY	42.4	
	SUPPORT	35.1	
	ADV PROC (PRIOR YR)	-27.1	
	ADV PROC (CURR YR)	36.8	
	INITIAL SPARES	$ 38.0 M	
	TOTAL PROCUREMENT COST	$ 481.8 M	

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
82	483	$ 1,470.4 M

HARM (AGM-88)

AIRFRAME **MANUFACTURERS** ENGINE

TEXAS INSTRUMENTS
DALLAS, TX

QUANTITY **FY 85 REQUEST** **UNIT COST**

QUANTITY			UNIT COST
803	WEAPONS SYSTEM COST	$ 309.7 M	$ .333 M RECURRING FYAWAY
	RECURRING FLYAWAY	$ 267.3 M	
	NON RECUR/ANCILLARY	28.4	
	SUPPORT	14.0	
	ADV PROC (PRIOR YR)	-	
	ADV PROC (CURR YR)	-	
	INITIAL SPARES	$ 8.6 M	
	TOTAL PROCUREMENT COST	$ 318.3 M	

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
180	663*	$ 833.8 M

*INCLUDES REQUESTED INCREASE OF 151 MISSILES IN FY-84 AS RESULT OF FAVORABLE CONTRACTUAL NEGOTIATIONS

HARPOON (AGM 84A)

MANUFACTURERS

AIRFRAME	ENGINE
MCDONNELL DOUGLAS ST. CHARLES, MO	TELEDYNE CAE TOLEDO, OH.

FY 85 REQUEST

QUANTITY: 354

WEAPONS SYSTEM COST: $ 327.1 M

RECURRING FLYAWAY	$ 278.0 M
NON RECUR/ANCILLARY	10.2
SUPPORT	38.9
ADV PROC (PRIOR YR)	–
ADV PROC (CURR YR)	–

INITIAL SPARES: $ 34.9 M

TOTAL PROCUREMENT COST $ 362.0 M

UNIT COST: $ .785 M RECURRING FYAWAY

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
1294	741	$ 2,171.6 M

IR MAVERICK (AGM-65F)

MANUFACTURERS

AIRFRAME

ENGINE

HUGHES AIRCRAFT
CULVER CITY, CA

FY 85 REQUEST

QUANTITY: 190

WEAPONS SYSTEM COST: $ 29.7 M

RECURRING FLYAWAY	$ 22.7 M
NON RECUR/ANCILLARY	1.5
SUPPORT	5.5
ADV PROC (PRIOR YR)	–
ADV PROC (CURR YR)	–

INITIAL SPARES: $ – M

TOTAL PROCUREMENT COST $ 29.7 M

UNIT COST: $ 0.119 M RECURRING FYAWAY

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
0	0	$ 29.7 M

LASER MAVERICK (AGM-65)

AIRFRAME | **MANUFACTURERS** | **ENGINE**

HUGHES AIRCRAFT
CULVER CITY, CA

QUANTITY	**FY 85 REQUEST**		**UNIT COST**
600.	WEAPONS SYSTEM COST	$ 110.6 M	$ .156 M RECURRING FYAWAY
	RECURRING FLYAWAY	$ 93.3 M	
	NON RECUR/ANCILLARY	7.2	
	SUPPORT	10.1	
	ADV PROC (PRIOR YR)	-	
	ADV PROC (CURR YR)	-	
	INITIAL SPARES	$ .1 M	
	TOTAL PROCUREMENT COST	$ 110.7 M	

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
-0-	275	$ 193.3 M

HELLFIRE (AGM-114)

AIRFRAME | **MANUFACTURERS** | **ENGINE**

ROCKWELL INT.
DULUTH, GA

QUANTITY	**FY 85 REQUEST**		**UNIT COST**
438	WEAPONS SYSTEM COST	$ 25.2 M	$ 0.043 M RECURRING FYAWAY
	RECURRING FLYAWAY	$ 18.8 M	
	NON RECUR/ANCILLARY	–	
	SUPPORT	6.4	
	ADV PROC (PRIOR YR)	–	
	ADV PROC (CURR YR)	–	
	INITIAL SPARES	$ 0.3 M	
	TOTAL PROCUREMENT COST	$ 25.5 M	

PROGRAM STATUS

INVENTORY 1 JAN 84	FUNDED & UNDELIVERED	PROCUREMENT COST THRU BUDGET YR
0	219	$ 42.4 M

STATEMENT OF VICE ADM. ROBERT F. SCHOULTZ, U.S. NAVY, DEPUTY CHIEF OF NAVAL OPERATIONS (AIR WARFARE), ACCOMPANIED BY GEN. WILLIAM H. FITCH, DEPUTY CHIEF OF STAFF FOR AVIATION FOR THE MARINE CORPS, AND VICE ADM. JAMES B. BUSEY, COMMANDER OF THE NAVAL AIR SYSTEMS COMMAND

Admiral SCHOULTZ. Thank you, Mr. Chairman.

I am honored to be here to present this 1985 budget.

As you mentioned, I have General Fitch from the Marine Corps and Admiral Busey, Commander, Naval Air Systems Command, with me.

I appreciate the written statement being included in the record.

Before I review the Navy and Marine Corps tactical air programs, I would like to make some brief general comments. I have a few slides to go with this.

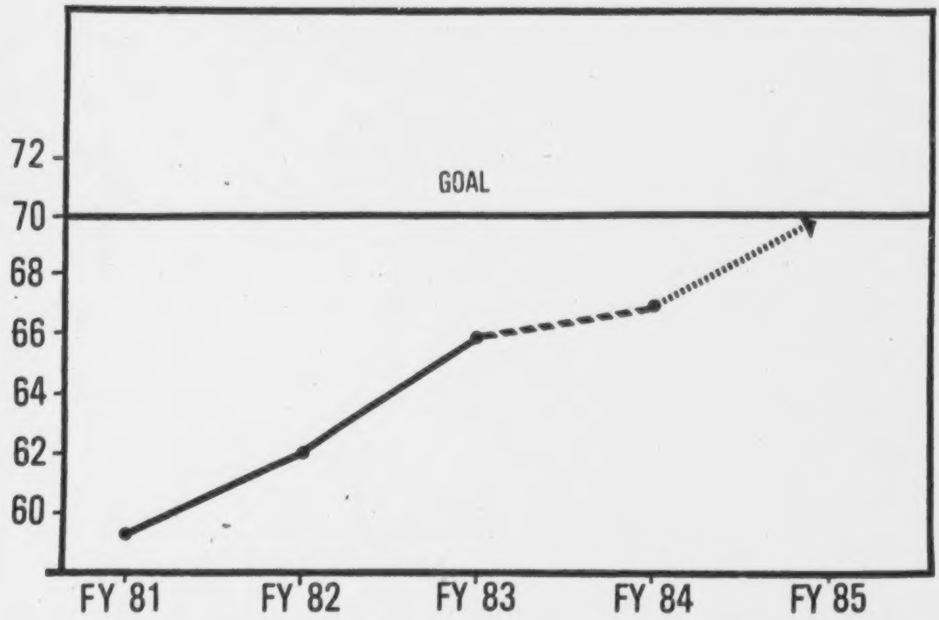
The events of the last year have confirmed the importance of maintaining the vitality of the Navy-Marine Corps aviation team. National commitments require that our forces be deployed to protect U.S. interests around the world in peacetime and be prepared to respond at any level in conflict.

The ability of Navy-Marine Corps aviation to respond in crisis situations, has been dramatically demonstrated in Central America, Grenada, and Lebanon during the past 12 months.

The Department of the Navy has continued to make measurable impovements in several key aviation areas.

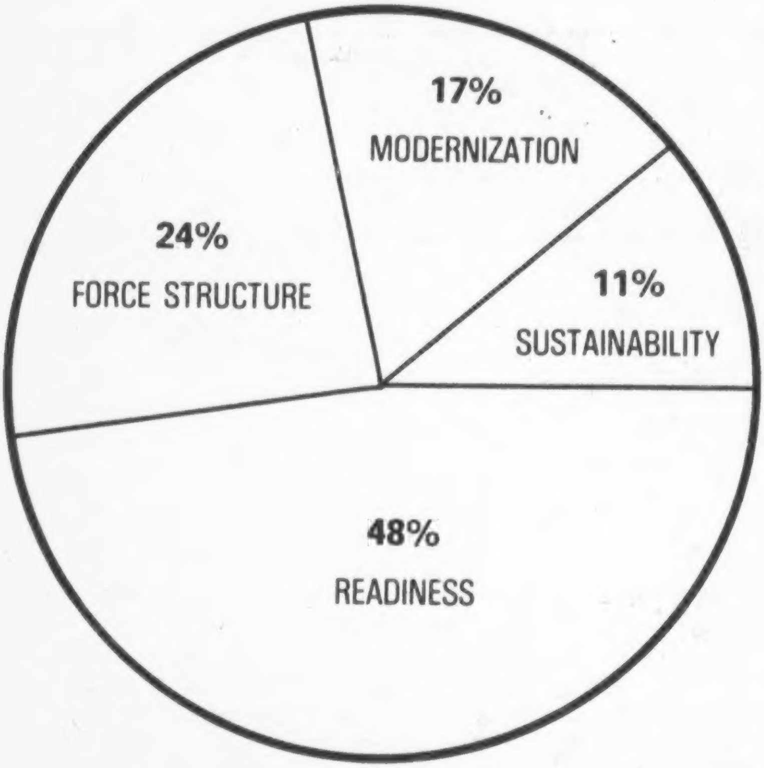
Our goal for material readiness is to achieve a force level aircraft mission capable rate of 70 percent. Navy and Marine Corps aviation readiness trends are moving positively in that direction. We averaged 66.5-percent mission capable in fiscal year 1983 and forecast 67 percent in fiscal 1984.

TOTAL FORCE
MATERIEL READINESS (MC)



Readiness remains a paramount consideration in the allocation of our resources. Depicted here is the spread of naval aviation dollars which indicates our investment in readiness. Our readiness figures will continue to rise with your sustained support of aviation spares, aircraft depot rework and support equipment funding requests.

OP-05 FY85 TOA



I have to compliment this committee on their support in the past. I think it is that support that is showing up in the increased readiness factor.

We have a pressing modernization requirement as the threat to naval aviation forces continues to grow while the age of out tactical air force also increases. The introduction of the F/A-18, and the Marine Corps AV-8B Harrier program, will positively address those two modernization problems.

I will cover specific aircraft upgrade initiatives later in my review of individual programs.

In 1983, Navy and Marine Corps aviation attained the safest year on record. A rate of 4.33 major mishaps per 100,000 flight hours was achieved and we feel certain that our goal of 4.0 this year is achievable.

AVIATION SAFETY

RECENT YEAR COMPARISON

	CALENDAR YEARS		
	1981	1982	1983
MISHAPS	95	90	88
RATE/100,000 FLT HRS	4.83	4.46	4.33

Senator GOLDWATER. Does this include the AV-8?

Admiral SCHOULTZ. Yes, sir, this includes everything. We have good ones and bad ones. That was our average.

Our budget request for fiscal year 1985 is designed to strengthen air warfare in the Department of the Navy and represents a considered balance of competing priorities. The requested procurements do not meet every requirement, but I am convinced that our budget request will achieve the highest level of effectiveness within the constraints of fiscal reality

As we build force levels toward the 600-ship Navy, and the necessary aviation assets to support that growth, we must carefully balance our procurement program.

Affordability is the crucial issue and substantial progress has been made in aircraft procurement cost reductions. Program cost growth has been reversed and we will continue to stress cost reduction in future contractual agreements.

In each budget we must assess tradeoffs between force requirements and affordability. You know that we do that each year. This necessitates a careful scrutiny of the number of aircraft production lines and possible ways to reduce that number. We make every effort to procure an aircraft over the shortest practical period.

However, production lines for tactical combat aircraft must be kept open for the next several years as we build our force levels.

The 13th airwing just stood up on March 1 in Ocearra and the 14th airwing will stand up in 1987.

The 13th and 14th airwings associated with the new carrier deliveries need to be outfitted with first line aircraft over the FYDP years. The modernization of U.S. Marine Corps airwings in the close air support role requires near term, continued procurement of the AV-8B and F/A-18.

A final factor which influences the number of production lines is the total force concept of horizontal integration of Reserve forces with current and carrier compatible aircraft. This is a vital requirement since the 15th carrier will be outfitted with a Reserve airwing.

Current research and development efforts are leading toward more multimission aircraft such as the JVX and continued emphasis in this direction will further reduce the number of production lines. From 16 lines in fiscal year 1985, we will go to 14 in 1986, 12 in 1987, and 11 in 1989. So, we are making progress.

I recognize your concern over this issue and the Navy is working to reduce the number of production lines in the future.

As you know, the Navy is reviewing the future composition of its carrier airwing. Depicted here is a comparison between the standard airwing and the new or "notional" wing.

AIR WING MIX

CURRENT				NOTIONAL
24 F-14	24	FIGHTERS	38	20 F-14
24 A-7 10 A-6	34	ATTACK	38	18 F/A-18 20 A-6
4 KA-6D				ARS
10 S-3 6 SH-3H	16	ASW	18	10 S-3 8 CV ASW HELO
4 E-2C 4 EA-6B	8	AEW/ESM/EW	10	5 E-2C 5 EA-6B
86 ACFT				86 ACFT

- UNDER FINAL REVIEW
- CHANGES WILL BE EVOLUTIONARY
- AT SEA EFFECTIVENESS STUDIES
  - KENNEDY (A6, F14)
  - CONSTELLATION (F/A 18, A6, F14)
  - CORAL SEA (F/A 18, A6)

You can see the increased flexibility of tactical employment which the notional airwing offers the operational commander.

We are also evaluating several airwing mixes at sea to gain operational data on revised airwing effectiveness.

U.S.S. *John F. Kennedy* has deployed with an airwing comprised of A-6E's and F-14's; U.S.S. *Constellation* will operate with A-6E's, F-14's, and F/A-18's; while U.S.S. *Midway* and U.S.S. *Coral Sea* will be outfitted with A-6's and four squadrons each of F/A-18's.

All carriers will retain a normal deck multiple of support aircraft. Each of these airwings has particular strengths and limitations that must be considered in tactical planning.

As the results come in, we will be evaluating the best blend of individual aircraft types in the carrier airwing for maximum effectiveness. Any changes will be evolutionary.

The carrier airwing composition issue is under final review within the Navy and the final determination will form the basis for structuring the future of naval aviation forces.

In the near term our airwing force level requirements are paramount. The result is that the quantity of aircraft requested in fiscal 1985 will not be affected.

The Navy electronic warfare improvement program is tied closely to the future effectiveness of our TACAIR assets. The threat posed by both electro-optical and infrared systems has grown in recent years.

Electronic jamming does not preclude engagement by these systems and electro-optical/infrared countermeasures developments are vital to the survival of our forces.

SOVIET IR TACTICAL AIR DEFENSE WEAPONS

SA-7 GRAIL
MAX EFF RANGE 5-6 KM

SA-9 GASKIN
MAX EFF RANGE 8KM

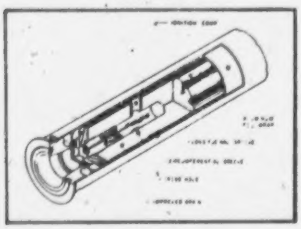
The SA-7 Grail and SA-9 Gaskin are typical of Soviet surface-to-air systems with both infrared and electro-optical capabilities.

The electronic warfare improvement program, now in its second year, draws on the lessons learned from the Falkland Islands crisis, the Israeli-Syrian encounters in the Bekaa Valley, and our experience in Lebanon.

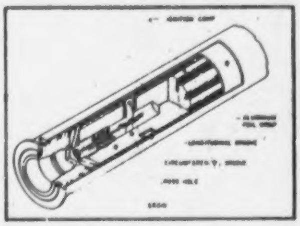
The combat performance of the infrared air-to-air missile has been impressive and the infrared surface-to-air threat has continued to grow.

FLARES

MK-46



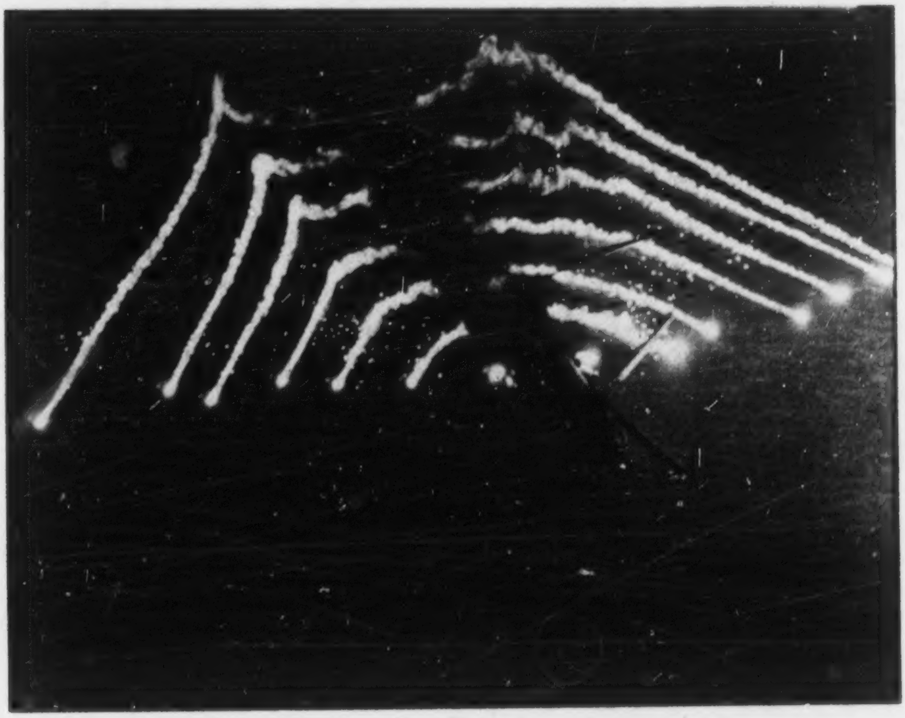
MJU-8



MJU-18

Flares are proving very effective in protecting our aircraft from infrared missiles. The two flares on the left are designed for a variety of tactical aircraft while the MJU-18 is the latest in infrared countermeasures for our helicopters.

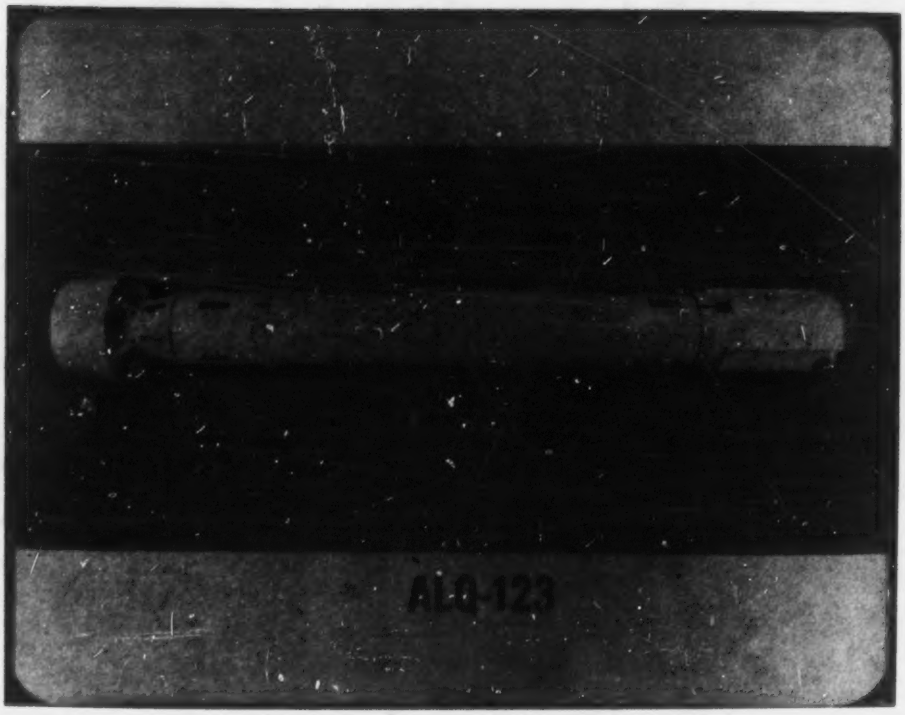
Shown on page 1490 is the EA-6B deploying one of these tactical flares, the MK-46.



This slide depicts the same flare being employed by a HELO.

Here is a ground test of the MJU-18 clearly demonstrating its intense heat generating capability. This is primarily for helicopters.

Infrared jammers, a relatively new countermeasure concept, use cesium arc technology which is proving effective for helicopters. This technology can be employed on our attack aircraft using such equipment as the ALQ-123 pod shown here.



The way I understand it, not being an engineer, the cesium arc [deleted].

We are committed to a developmental effort to increase TACAIR warfighting capability and aircraft survivability. We haven't done very well over the last few years as you can see. We need your support in sustaining our R&D request in the electronic warfare improvement line.

BUDGET CUTS

- **FY '84 NAVY AIR EO/IR BUDGET CUT 20% BY CONGRESS**
- **4 OUT OF LAST 8 YEARS, CONGRESS HAS CUT NAVY AIR EO/IR BUDGET FROM 7% TO 20%**

I would like to update the members of this committee on the status of another major modernization initiative—VTXTS. This program is an integrated training system which includes the T-45 aircraft, academic devices, simulators, and contractor logistic support.

As Congress directed, the T-45 complete training system has been restructured and includes carrier capable aircraft only. The single-phase aircraft program is being built around the following essential requirements: An early IOC to preclude shortfalls in training aircraft inventories; the advantage of derivative technology to insure a cost-effective R&D funding profile; a procurement schedule which is executable; and an APN funding profile which is affordable.

The program is currently in the final stages of review within the Department of Defense.

Finally, I have a plan that everybody agrees to and we are going down to OSD with it, I think in 2 weeks, and it will be to the Congress before the middle of the month.

Senator GOLDWATER. Is the Navy completely happy with that trainer?

Admiral SCHOULTZ. Yes, sir. We are completely happy also to get only one type of aircraft.

Senator GOLDWATER. Is it true that it is requiring less ground time than you thought it would?

Admiral SCHOULTZ. Yes, sir. It is doing better. We believe from the RAF numbers, and from what McDonnell Douglas tells us, that our airplane will be significantly improved and much cheaper to operate.

The O&S costs on this airplane will be dramatically less. I have forgotten the amount of savings each year, but I flew the airplane out of Andrews, out to the Patuxent area and shot landings at Patuxent and brought it back and was gone over and hour and only used 1,400 pounds.

That was impressive.

Senator GOLDWATER. Are you using this now for carrier landings?

Admiral SCHOULTZ. No, sir. That is what it will be used for, but it won't be fully integrated in the training program until 1991.

Senator GOLDWATER. Is it modified yet with the hook?

Admiral SCHOULTZ. It has not been, but it is being modified. That is the program. It also includes a stronger landing gear, and other changes in the aircraft.

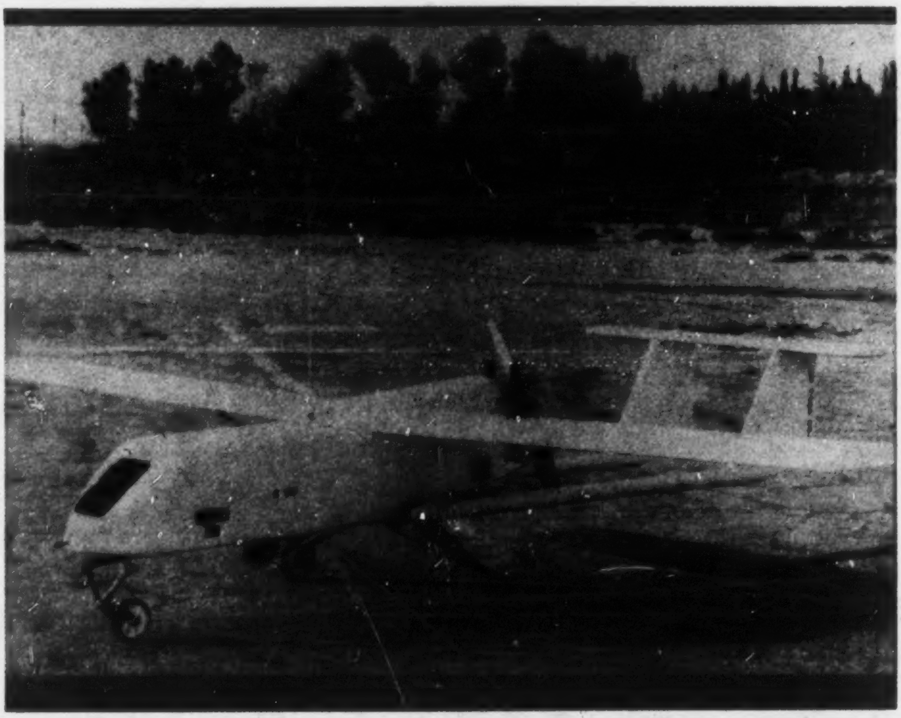
Another initiative which has received emphasis due to events in Lebanon and Central America is the mini-RPV (remotely piloted vehicle) program.

In response to urgent fleet requirements, procurement of one Israeli mini-RPV system, known as Mastiff, is being negotiated.

We just had the last committee approval. I would like to thank this committee again for their support. The last approval was received yesterday. The final contract has not yet been awarded.

In February negotiations were also completed for a limited purchase of the Israeli air-launched decoy, called Sampson, to provide an immediate capability.

Training of Navy personnel in the operation of these systems is underway and they will be operational in the near future.



The Mastiff, shown here, is shipboard capable and is a quick solution to the requirement. A follow-on U.S. Navy/U.S. Marine Corps program is being established to further develop RPV's and take advantage of American idustrial technology and expertise.

Subsequent action will be reviewed with Congress upon completion of program acquisition strategy.

Senator GOLDWATER. That has transmission capability in flight?

Admiral SCHOULTZ. Yes, sir. It is a television with improved raster, with line of sight [deleted] and in clear air with no fog or moisture it will go farther than that.

It has an in-place camera that will get you pictures. The personnel operating it are primarily marines because they have an MOS and can pick out of their personnel those people who have knowledge of radio-controlled aircraft.

So, we went through the Marine Corps and got some real topnotch guys and they are over there learning how to do this. They are doing a super job. They can get this on and off the ship. They have a recovery thing, a rubber band that stops it.

Senator GOLDWATER. I saw it at the Paris Air Show. I could not believe it. It looked like something my youngest grandson made in the garage.

Admiral SCHOULTZ. The Israelis used it during the war [deleted].

TACTICAL PROCUREMENT

Admiral SCHOULTZ. Now I will review individual tactical procurement program with cost information presented in the format requested by your staff.

We will display program unit cost in constant year 1985 dollars and also show cost growth from the development estimate for those programs documented by the congressional selective acquisition report system or SAR's.

For established programs not documented by SAR information, the cost growth presented is measured from the total in the previous year's budget.

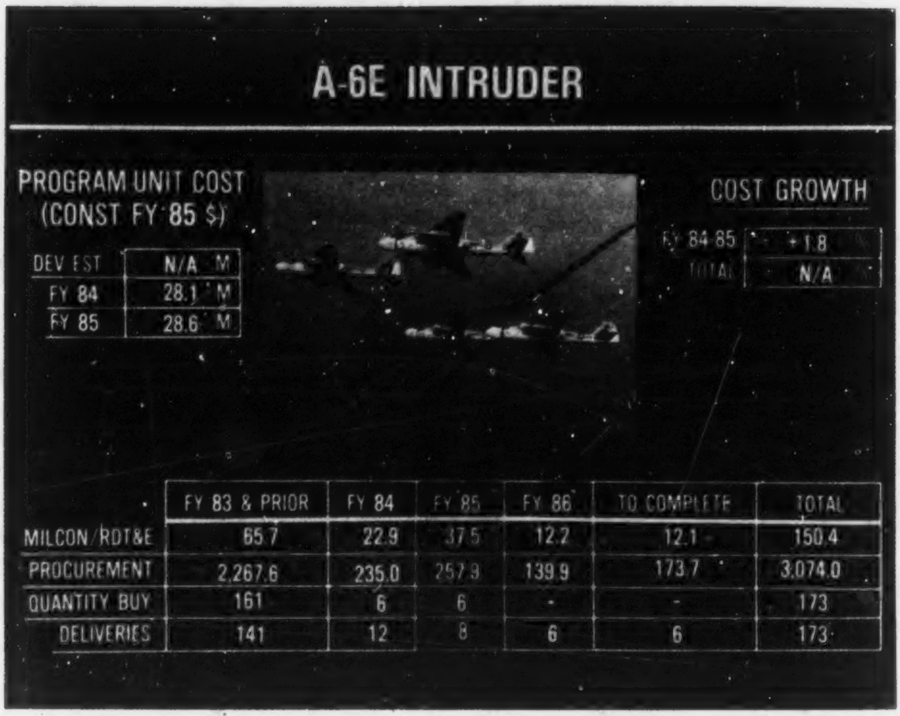
The A-6E Intruder is the only medium attack carrier-based aircraft in the U.S. inventory equipped for locating and striking fixed moving targets, day or night, especially in inclement weather.

The aircraft is particularly well-suited for the war-at-sea, power projection, and deep interdiction roles.

The aircraft has been improved throughout its years of service and remains one of today's most capable long-range attack aircraft. The present multimode radar, high-speed computer, and inertial navigation systems have been integrated with the Target Recognition Attack Multisensor [TRAM] capability.

This capability provides significantly improved bombing accuracy and target locating capability.

The A-6E will continue to be upgraded, but at a modest level in the near term. Affordability within the total APN program has precluded extensive modernization in fiscal year 1985 and the subject is under review as a POM-86 issue.



A-6E INTRUDER

PROGRAM UNIT COST
(CONST FY 85 $)

DEV EST	N/A M
FY 84	28.1 M
FY 85	28.6 M

COST GROWTH

FY 84-85	+1.8
TOTAL	N/A

	FY 83 & PRIOR	FY 84	FY 85	FY 86	TO COMPLETE	TOTAL
MILCON/RDT&E	65.7	22.9	37.5	12.2	12.1	150.4
PROCUREMENT	2,267.6	235.0	257.9	139.9	173.7	3,074.0
QUANTITY BUY	161	6	6	-	-	173
DELIVERIES	141	12	8	6	6	173

The $257.9 million requested in fiscal year 1985 includes $214.6 million for the procurement of six aircraft and $43.3 million for initial spares. The recurring flyaway unit cost of the A-6E is $23.9 million.

Senator BINGAMAN. Maybe this is a good time to ask this question.

You have been asked numerous times last year and maybe for years as to the justification for keeping lines open, production lines, for all these different aircraft.

I notice in your testimony, Admiral, you have a statement on page 6 saying, "Production lines for tactical combat aircraft must be kept open for the next several years as we build our force levels."

Admiral SCHOULTZ. Yes, sir.

Senator BINGAMAN. I had asked Admiral Watkins when he testified before about that. He sent me a letter saying the 16 lines in fiscal 1985 will drop to 14 in 1986, to 12 in 1987, and to 11 in 1989. Is that your information, too?

Admiral SCHOULTZ. Yes, sir.

Senator BINGAMAN. Will this be one we drop next year?

Admiral SCHOULTZ. That is one we planned to drop, but I don't think we are going to close it primarily because of inventory shortages.

Senator BINGAMAN. I haven't been here enough years to know, but it seems to me that these lines are easy to drop the next year, but when you get up to that time, you never can drop them.

Is there a way that we can get an indication which two will be dropped next year and which two the year after so that we can get that on the record and follow it?

Admiral SCHOULTZ. Yes, sir. We did plan that number that you have, going to 14 in 1986 to include closing down the A-6E line.

Right now we are debating whether we will close it or not. That is a POM 1986 issue that we are working with.

The problem is can you buy a new airplane to fill that inventory shortage or should you keep this one open and buy more of them? That is the issue.

We are really planning to upgrade this airplane. That is our current plan. It has not been approved yet.

Two of the lines we will close out in 1986, are the SH-2F and the TH-57, which is a training aircraft. The KC-130, and the T-34, which is a trainer, will also close.

I have some other plans in the out years. I can plan from year to year, but every year is a new year. We are really programing to shut down those lines at this time.

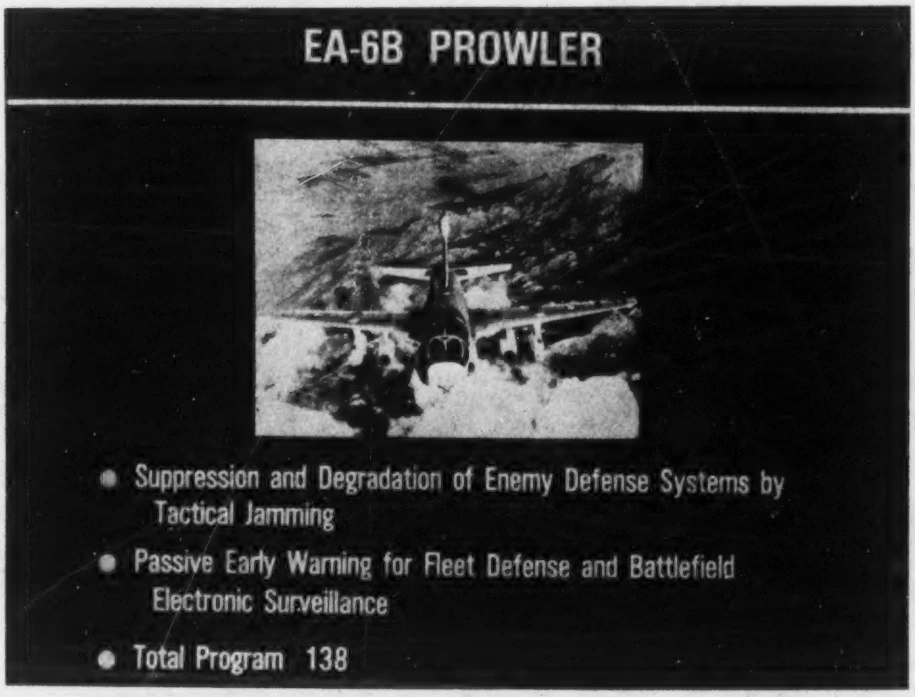
Senator BINGAMAN. Are there changes to what Admiral Watkins said here about the way these production lines will be reduced?

Maybe you can send me a follow-up letter.

Admiral SCHOULTZ. If we change from that number, we will tell you why.

Senator BINGAMAN. That will be helpful.

Thank you, Mr. Chairman.



EA-6B PROWLER

- Suppression and Degradation of Enemy Defense Systems by Tactical Jamming
- Passive Early Warning for Fleet Defense and Battlefield Electronic Surveillance
- Total Program 138

Admiral SCHOULTZ. The next aircraft is the EA-6B Prowler. The Navy/Marine Corps EA-6B Prowler is dedicated to tactical airborne electronic warfare. The Prowler is extremely flexible and fully capable of both active and passive electronic warfare support at sea and over land.

Because of the dynamic nature of electronic warfare, the Prowler's avionics suite has progressed through three generations with the latest production configuration known as ICAP, or improved capability.

The fourth generation EA-6B avionics suite is presently being produced. The new version, ICAP II, builds on the present capability and is devoted primarily to the sophisticated jammer portion of the system.

ICAP II will provide the most effective tactical electronic warfare aircraft in the world today and will strengthen the Navy's ability to counter anticipated electonic warfare threats well into the 1990's. The follow-on ADVCAP, is being developed.

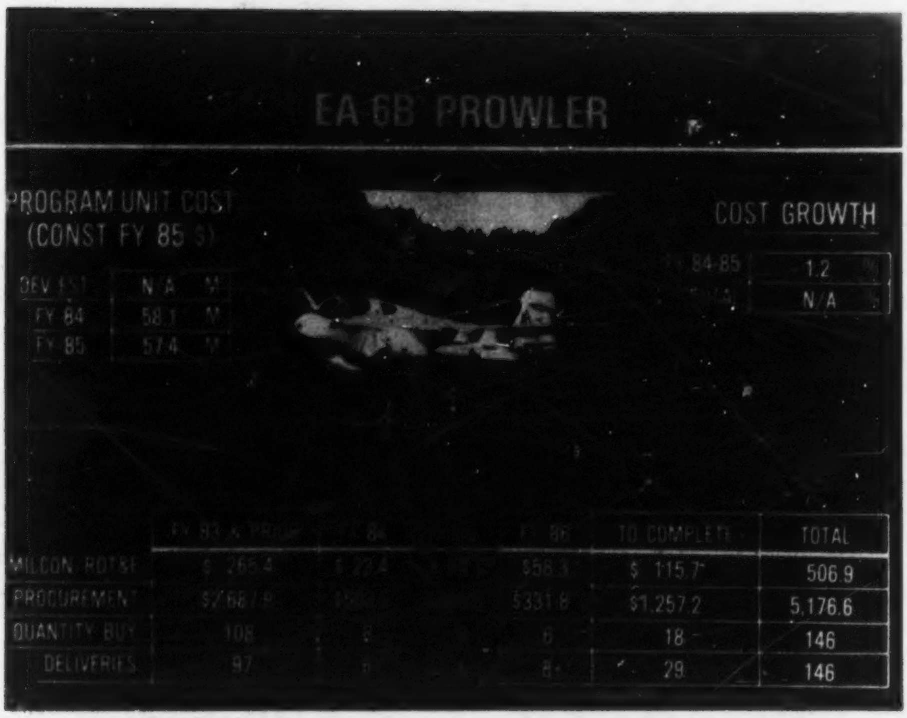
The communications jamming equipment in the EA-6B, the ALQ-92, has been known to be deficient and the Navy has taken steps to correct this situation.

The ALQ-92 [deleted] is being removed from service. Minor modifications to the ALQ-99 active electronic jamming pod are being investigated to provide an interim capability until the follow-on ALQ-149 enters service [deleted].

What I am really saying is that we can jam all kinds of electronic radars, fuses, search radars and all that sort of thing, but our ability to jam communications from this airplane is very limited.

We just had one bad pod that was not working well. We have a new one coming [deleted]. That one will jam [deleted].

The EA-6B with its ALQ-99 system is the most effective tactical jamming platform in the world. The lack of capability in the voice communications frequency range should not be interpreted as a deficiency in the EA-6B, but as an identified and correctable problem within a minor subsystem.



EA 6B PROWLER

PROGRAM UNIT COST
(CONST FY 85 $)

DEV EST	N/A M
FY 84	58.1 M
FY 85	57.4 M

COST GROWTH

84-85	1.2 %
[illegible]	N/A %

	FY 83 & PRIOR	FY 84	[illegible]	FY 86	TO COMPLETE	TOTAL
MILCON RDT&E	$ 265.4	$ 23.4	[illegible]	$58.3	$ 115.7	506.9
PROCUREMENT	$2,687.8	[illegible]	[illegible]	$331.8	$1,257.2	5,176.6
QUANTITY BUY	108	8	[illegible]	6	18	146
DELIVERIES	97	6	[illegible]	8	29	146

The $395.8 million requested in fiscal year 1985 includes $379.6 million for the procurement of six aircraft and $16.2 million for initial spares.

The recurring flyaway unit cost of the EA–6B is $26.3 million.

Senator **Bingaman**. I notice your total program estimate, you intended when you started this to buy 146. After this year you have gotten 116.

I thought on the first chart it said 146 was the quantity that you wanted.

Amdiral **Schoultz**. For this aircraft?

Senator **Bingaman**. Yes.

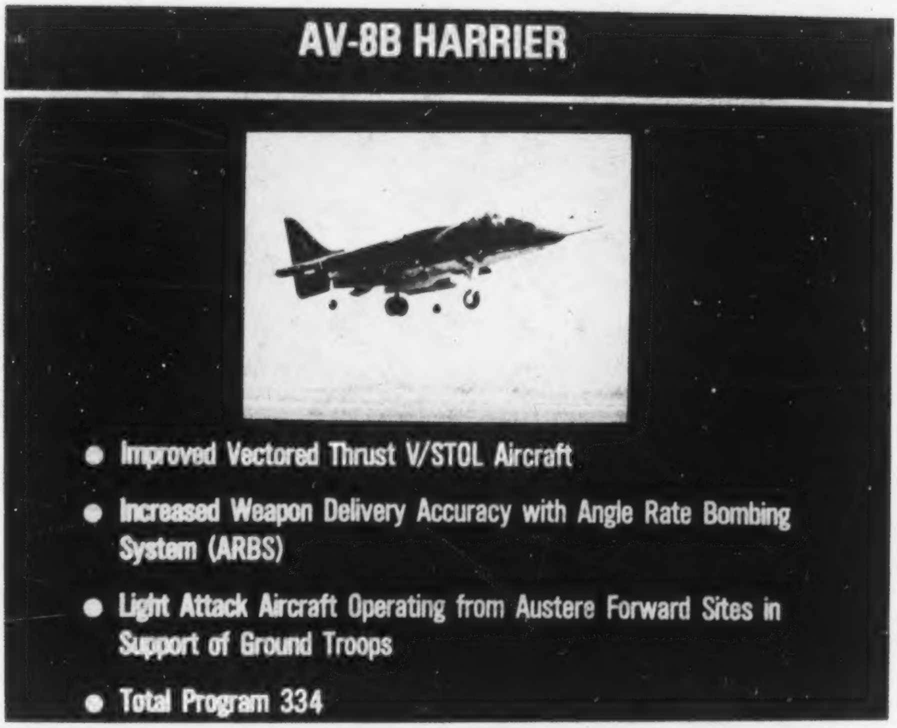
Do you have the total quantity you are planning to purchase?

Admiral **Schoultz**. Yes, sir, 146.

Senator **Bingaman**. So, you will have completed that by the end of this year; is that correct?

Admiral **Schoultz**. That is through the FYDP, the 5-year defense plan. The requirement is 146.

This is just the program for the 5-year plan, so it should go on. You ask "why don't you buy them faster?" The answer is affordability.

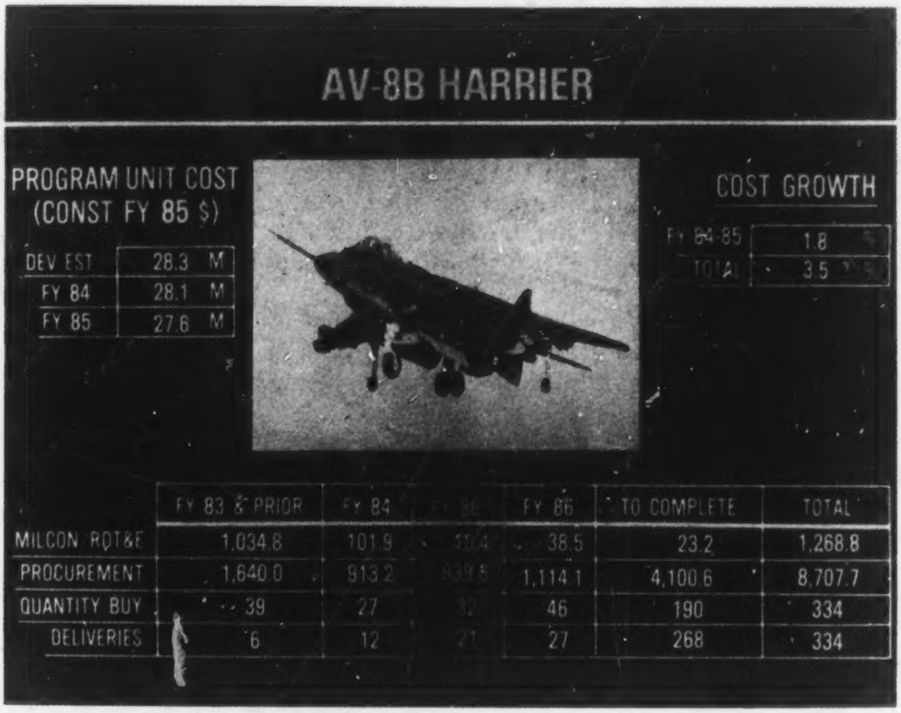


AV-8B HARRIER

- Improved Vectored Thrust V/STOL Aircraft
- Increased Weapon Delivery Accuracy with Angle Rate Bombing System (ARBS)
- Light Attack Aircraft Operating from Austere Forward Sites in Support of Ground Troops
- Total Program 334

The next one is Marine aircraft AV-8B Harrier II. The AV-8B Harrier II is the U.S. Marine Corps V/STOL light attack aircraft which is replacing the A-4 and AV-8A. It will meet the Marine Corps requirement for flexible, accurate and responsive close air support because of its ability to operate from austere forward sites close to engaged ground forces.

The Harrier II has successfully completed an extensive IOT&E progam and General Fitch will discuss the results in detail.



AV-8B HARRIER

PROGRAM UNIT COST
(CONST FY 85 $)

DEV EST	28.3 M
FY 84	28.1 M
FY 85	27.6 M

COST GROWTH

FY 84-85	1.8 %
TOTAL	3.5 %

	FY 83 & PRIOR	FY 84	FY 85	FY 86	TO COMPLETE	TOTAL
MILCON/RDT&E	1,034.8	101.9	70.4	38.5	23.2	1,268.8
PROCUREMENT	1,640.0	913.2	939.8	1,114.1	4,100.6	8,707.7
QUANTITY BUY	39	27	32	46	190	334
DELIVERIES	6	12	21	27	268	334

The $939.8 million requested in fiscal year 1985 includes $822.6 million for the procurement of 32 aircraft and $117.2 million for initial spares.

The recurring flyaway cost of the AV-8B is $18.3 million.

Senator **Dixon**. In light of what my colleague has asked, I am having a little trouble with this chart as well. The chart only contemplates a 5-year undertaking; is that right?

You show a total of 334.

Do you contemplate a greater purchase in total than that?

Admiral **Busey**. I think I understand source of confusion. The previous program is not a SAR program. Therefore, we only show the number that we intend to buy during the 5-year defense program.

For the SAR program we show the numbers that we intend to buy through completion of the program. This is the SAR program. So the 334 is the intended buy of the full program number.

Senator **Dixon**. How does one tell that by looking at the chart? Will you clarify that for me?

I understand what you are saying on this one. That is the total purchase. The last one showed 146. Obviously, it was not 155.

Where do you note that on the chart?

Admiral **Busey**. I think the easiest way to see it is in the total cost growth line. If there is a percentage of total cost growth, it is an SAR program.

The number in the lower right-hand corner gives the total program buy.

Senator **Bingaman**. What are the criteria used to determine what is an SAR program and what is not,

Admiral **Busey**. Congressional request and/or dollar values within R&D and procurement.

There are programs that don't meet the dollar-thresholds but are requested to be reported in the SAR system by the Congress.

Admiral **Schoultz**. The next aircraft is our F-14A Tomcat. The Tomcat is a superb aircraft, with a uniquely capable and extremely lethal weapon system. With its integral Phoenix missiles, it can successfully engage Soviet Backfire bombers at ranges which preclude the effective launch of missiles against our battle groups.

The Navy had made the decision to modernize the F-14A in lieu of developing a new fighter aircraft and F-14D R&D funding is requested in the fiscal year 1985 budget.

F-14D

- F 110 GENERAL ELECTRIC ENGINE
  - OPERABILITY
  - RELIABILITY/MAINTENANCE
  - PERFORMANCE
- AVIONICS
  - DIGITAL
  - FUTURE INTEGRATION
  - COMMONALITY
- RADAR
  - ECCM
  - IRST

The upgrade to the F-14D will include the major improvements shown here. We have selected the General Electric F-110 as the new engine, which takes advantage of the U.S. Air Force alternate fighter engine competition.

The incorporation of digital avionics in the Tomcat will allow integration of such systems as ASPJ, which is the Airborne Self-Protection Jammer, and JTIDS, the Joint Tactical Information Distribution system, and will pay dividends due to commonality with F/A-18 digital avionics.

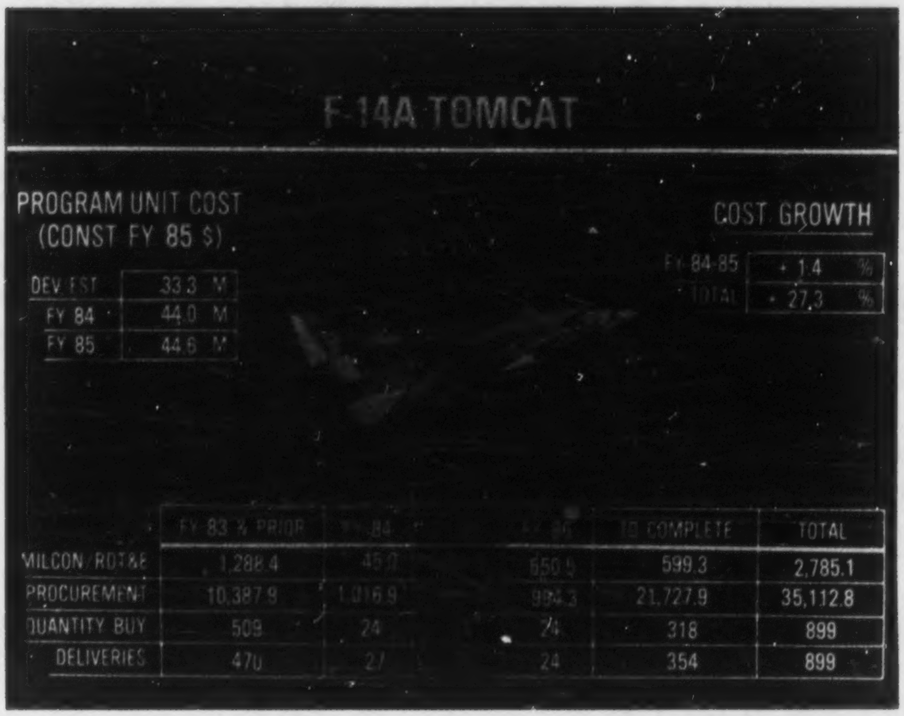
JTIDS is the jam-resistant secure voice system that we seem to have some trouble getting all the way on track, but we are working on it pretty hard.

We are putting all that in a digital system. The F-14A system is still an analog computer system. An analog system is very hard to change, whereas a digital system is easier to change.

We are going to use F/A-18 avionics in this airplane and possibly in the A-6 so that commonality will provide some logistics savings and also cut down on the R&D efforts.

Improvements to the AWG-9 radar will include electronic counter countermeasures, or ECCM, upgrades to keep pace with the Soviet ECM threat. The integration of the Infrared Search and Track [IRST] system will provide a vitally required passive detection capability.

We are working with the Air Force on that program.



F-14A TOMCAT

PROGRAM UNIT COST
(CONST FY 85 $)

DEV EST	33.3 M
FY 84	44.0 M
FY 85	44.6 M

COST GROWTH

FY 84-85	+ 1.4 %
TOTAL	+ 27.3 %

	FY 83 & PRIOR	FY 84	FY 85	TO COMPLETE	TOTAL
MILCON/RDT&E	1,288.4	45.0	650.9	599.3	2,785.1
PROCUREMENT	10,387.9	1,016.9	994.3	21,727.9	35,112.8
QUANTITY BUY	509	24	24	318	899
DELIVERIES	470	27	24	354	899

The $985.8 million requested in fiscal year 1985 includes $976.9 million for procurement of 24 aircraft and $8.9 million for initial spares.

The recurring unit flyaway cost of the F-14A is $32.7 million.

Senator Goldwater. Is that increase of 27.3 due to the addition of the new engine and the new avionics equipment?

Admiral Busey. That increase is calculated based on ongoing, all the way back to the development estimate and estimating all the changes to reach the current estimate. It is not due to the engines.

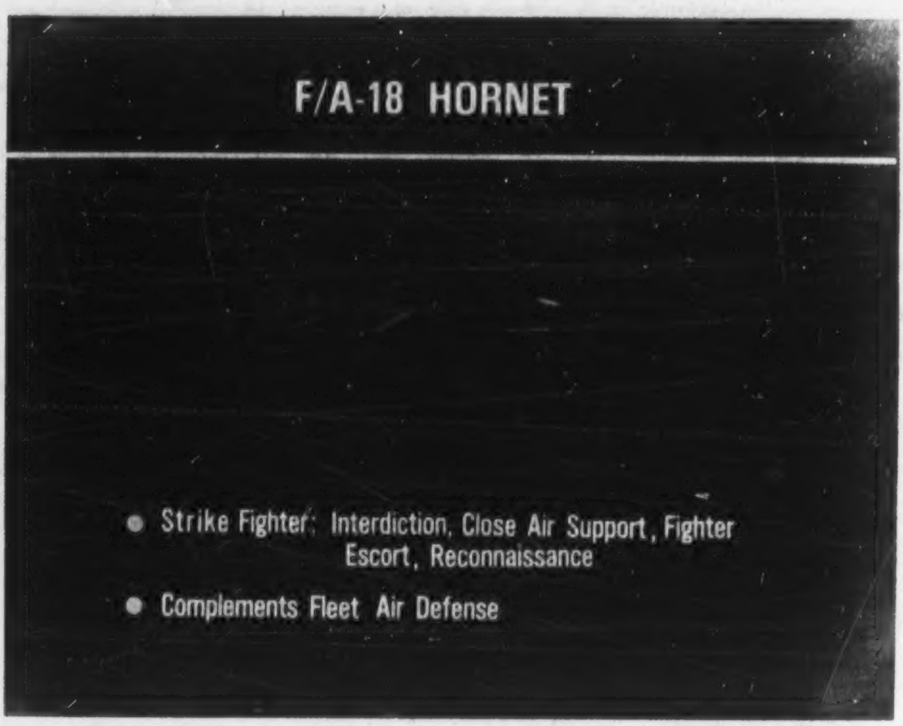
Admiral Schoultz. The F-14D, the upgraded F-14, will receive the first upgraded engine in 1987 and will be delivered in 1988.

The whole F-14D upgrade with the avionics and radar and the engines, the airplanes will not be available until 1988.

The next aircraft is our F/A-18 Hornet. The F/A-18 Hornet continues to demonstrate that the investment in reliability, maintainability, survivability, and multimission capability was money well spent.

The Navy and Marine Corps are into their third year of operations with the strike fighter and our fleet transition is proceeding on schedule. To date there are three Navy and three Marine Corps Hornet squadrons in the Active Force plus one Active and one Reserve Navy squadron undergoing training in the F/A-18.

Inputs from these operating units could not be more positive as the F/A-18 meets or exceeds our highest expectations.



F/A-18 HORNET

- Strike Fighter: Interdiction, Close Air Support, Fighter Escort, Reconnaissance
- Complements Fleet Air Defense

The F/A-18 procurement profile is shown here. The increase in Navy Marine Corps acquisition in the FYDP years is a result of force level requirements as a larger number of F-4's and A-7's reach the end of their service life.

F/A-18 PROCUREMENT PROFILE

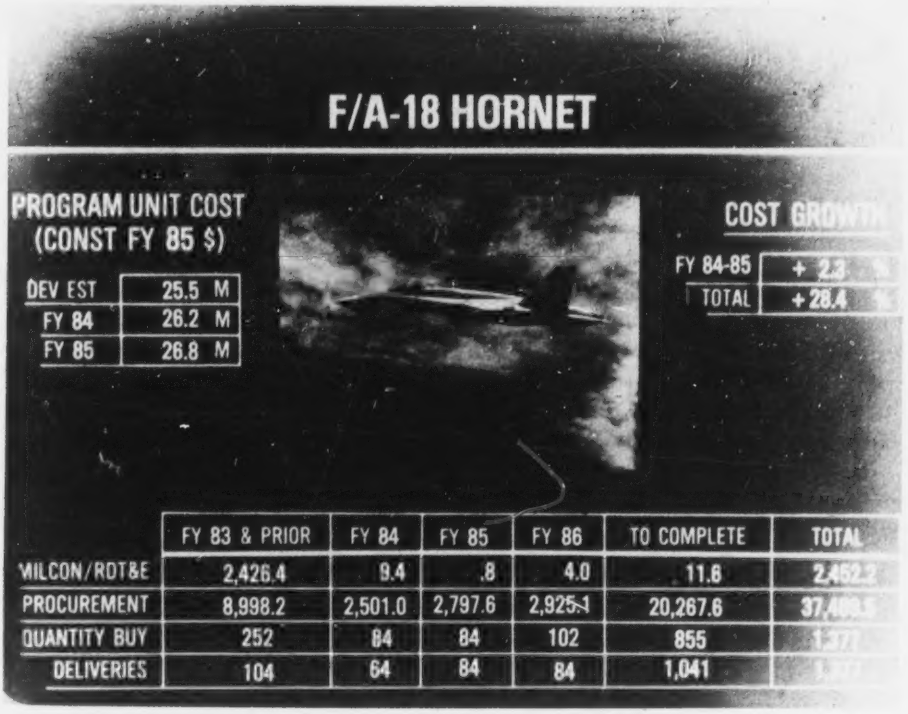
PROCUREMENT YEARS

	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89
● USN/USMC	9	25	60	63	84	84	84	102	120	120	120
● CANADA			18	24	24	25	24	23			
● AUSTRALIA					18	17	17	15	8		
● SPAIN						9	21	36	6		
● SPANISH OPTION									12		
● PROJECTED									18	36	36
TOTAL	9	25	78	87	126	135	146	176	164	156	156

☐ FIRM SALES

Foreign military sales, or FMS, are testimony to the superior strike fighter characteristics of the Hornet.

Several additional foreign acquisition proposals are being negotiated at this time and we expect FMS growth in the future.



F/A-18 HORNET

PROGRAM UNIT COST (CONST FY 85 $)

DEV EST	25.5 M
FY 84	26.2 M
FY 85	26.8 M

COST GROWTH

FY 84-85	+ 2.3 %
TOTAL	+ 28.4 %

	FY 83 & PRIOR	FY 84	FY 85	FY 86	TO COMPLETE	TOTAL
MILCON/RDT&E	2,426.4	9.4	.8	4.0	11.6	2,452.2
PROCUREMENT	8,998.2	2,501.0	2,797.6	2,925.1	20,267.6	[illegible]
QUANTITY BUY	252	84	84	102	855	1,377
DELIVERIES	104	64	84	84	1,041	[illegible]

The $2,797.6 million requested for fiscal year 1985 includes $2,686 million for procurement of 84 aircraft and $111.6 million for initial spares.

The recurring flyaway unit cost of the F/A-18 is $21 million.

We have over 50,000 flight hours, Mr. Chairman, operational flight hours, not testing, with this airplane. It is just doing a superb job.

We have had only one operational accident with it. In that accident the pilot was lost at night doing GCA's over the water into MCAS El Toro. We don't know exactly what happened. We tried to recover the aircraft from the ocean floor, but it was too spread out.

We didn't get the pilot back. We are not sure what the problem was. It happened at night with multilayer cloud conditions off the west coast. It could have been weather or anything.

Senator **Goldwater**. What is your readiness rate on this aircraft?

Admiral **Busey**. Captain Strohsahl, the program manager can answer that.

Captain **Strohsahl**. Our latest readiness as of 3 weeks ago, is 72.1 percent mission capable.

Senator **Goldwater**. How does that compare with the total average of aircraft readiness?

Do you have any aircraft higher or lower?

Captain **Strohsahl**. It would be among the highest.

Admiral **Schoultz**. Our average was 66.8 for the force the last year. So, it is a good percentage up above that.

General **Fitch**. Mr. Chairman, I might comment for the Marines.

We have been operating three F/A–18 squadrons at El Toro for roughly the past year. If we look at this calendar year, we are having an 85-percent mission capable rate and 70 percent full mission capable rate. That is this calendar year.

There was a switch in October to Government support and that is creating some problems. We don't feel the depth of support is there, but the maintainability of the aircraft is very clear and distinct to us. It is a highly maintainable aircraft in the Fleet Marine Force.

Senator GOLDWATER. Are you both flying the F/A–18 to check the pilots out in?

General FITCH. Yes, sir.

Admiral SCHOULTZ. New pilots are flying the airplane. I think our accident statistics are remarkable for a new aircraft. We are taking new pilots out of the training command into this program.

In fact, two of them I talked to at Pensacola about 2 months ago went out to the ship and did their initial carrier qualifications in this airplane and got 10-day traps and 6-night traps without a bolter.

I don't have that same record. I haven't flown this airplane yet. I have to give the aircraft some of the credit.

Senator BINGAMAN. Mr. Chairman, could I ask, is this plane equipped with flare dispensers?

Admiral SCHOULTZ. Yes, sir. It has two dispenser units. Flares can be dispensed either automatically or manually.

Senator BINGAMAN. Is the increase in the cost growth up there again from your very early estimate?

Admiral BUSEY. Yes, sir. One goes back to the initial development estimate which was very early in the history of the aircraft and then adds in the pluses and minuses due to schedule changes, engineering changes, quantity changes, estimating changes, and support changes, and then calculates those changes based on that development estimate.

That is what produces the 28.4 that you see.

Admiral SCHOULTZ. For example, the flyaway cost of this airplane in 1982 is the one that Secretary Lehman negotiated with the contractors at $22.5 million per copy.

In 1983 it was 20.8. So, it came down the learning curve significantly. We also increased the quantity.

In 1984 it was 20.2.

This year it is 21 so it is up slightly.

You figure inflation in there, plus various changes in the airplane.

Senator BINGAMAN. Is the percentage cost growth a real increase?

That does not include inflation?

Admiral BUSEY. That is correct.

Senator BINGAMAN. There was a 2.3-percent real increase this year in cost in addition to inflation?

Admiral BUSEY. That is correct.

Admiral SCHOULTZ. That should be about right.

Admiral BUSEY. I might add one of the significant reasons for that is in our schedule reflected there. We are beginning to buy not only the FLIR system, but the laser spot tracker and other additions.

Admiral SCHOULTZ. That is why the total number goes up. The recurring flyaway cost is added to those items below the line to compute total flyaway cost. That includes all ancillary and nonrecurring costs.

You don't buy all equipment one for one. They go into the total program.

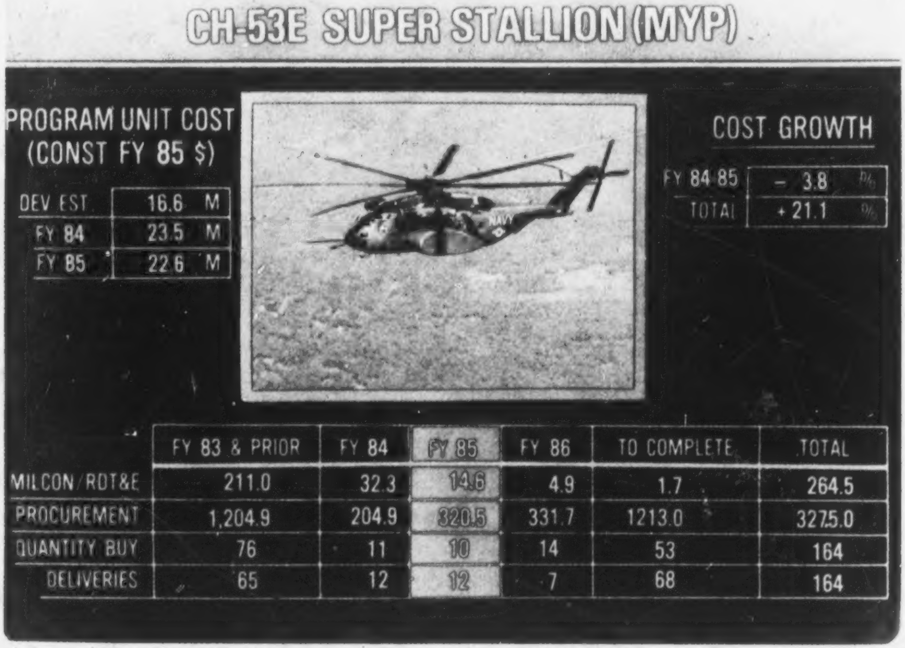
The next aircraft is the CH/MH-53E Super Stallion. The CH/MH-53E is the Marine Corps' heavy lift assault helicopter and will be adapted for the Navy's airborne mine countermeasures mission.

The fiscal year 1985 budget requests approval of the CH/MH-53E for multiyear procurement.

In addition to providing significant savings, the program meets the following criteria for MYP:

A high degree of cost confidence based on 7 prior years of CH-53E procurements, a validated requirement, stable funding, and a stable configuration.

Multiyear procurement savings of $130 million will be realized when compared to annual procurement of the CH/MH-53E.



CH-53E SUPER STALLION (MYP)

PROGRAM UNIT COST (CONST FY 85 $)

DEV EST	16.6 M
FY 84	23.5 M
FY 85	22.6 M

COST GROWTH

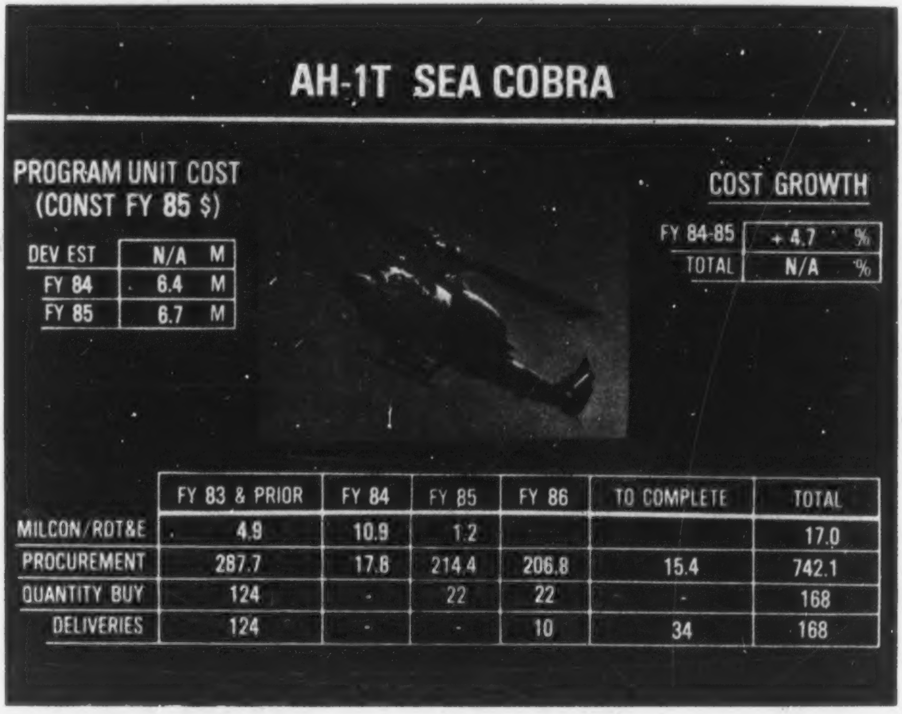
FY 84-85	- 3.8 %
TOTAL	+ 21.1 %

	FY 83 & PRIOR	FY 84	FY 85	FY 86	TO COMPLETE	TOTAL
MILCON/RDT&E	211.0	32.3	14.6	4.9	1.7	264.5
PROCUREMENT	1,204.9	204.9	320.5	331.7	1213.0	3275.0
QUANTITY BUY	76	11	10	14	53	164
DELIVERIES	65	12	12	7	68	164

The $320.5 million requested in fiscal year 1985 includes $292.9 million for the procurement of 10 aircraft, 8 CH, and 2 MH-53E's.

The recurring flyaway unit cost of the CH/MH-53E is $15.8 million.

The AH-1T Sea Cobra with the upgraded T-700 engine provides armed escort of troop assault Helos ,plus close-in fire support to include antiarmor operations for Marine Corps ground elements.



AH-1T SEA COBRA

PROGRAM UNIT COST
(CONST FY 85 $)

DEV EST	N/A	M
FY 84	6.4	M
FY 85	6.7	M

COST GROWTH

FY 84-85	+ 4.7	%
TOTAL	N/A	%

	FY 83 & PRIOR	FY 84	FY 85	FY 86	TO COMPLETE	TOTAL
MILCON/RDT&E	4.9	10.9	1.2			17.0
PROCUREMENT	287.7	17.8	214.4	206.8	15.4	742.1
QUANTITY BUY	124	-	22	22	-	168
DELIVERIES	124	-	-	10	34	168

The $214.4 million requested in fiscal year 1985 includes $193 million for the procurement of 22 aircraft and $21.4 million for initial spares.

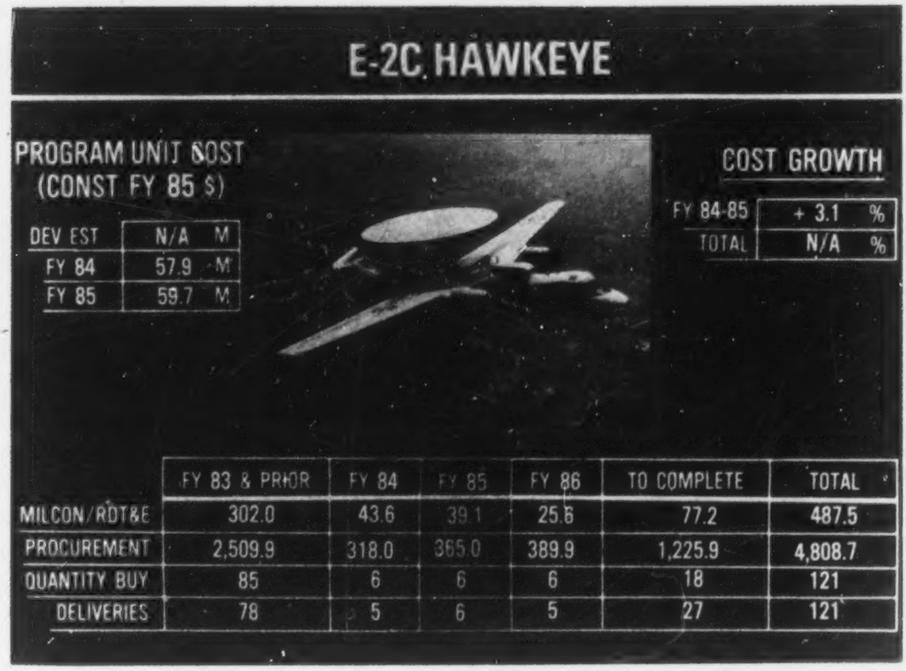
The recurring flyaway unit cost of the AH-1T is $6.7 million.

We lost two AH-1T's in Grenada, but these were without the new engines.

The next aircraft is the E-2C Hawkeye. The E-2C is the latest of the E-2 family of carrier-based, twin turboprop, airborne, early warning [AEW] and control aircraft.

The Hawkeye is equipped with an airborne tactical data system [ATDS], incorporating both active and passive sensors, and provides real time, computer-derived, threat warning and tactical analysis to the task force commander.

In addition to its primary mission of early warning and fighter control, the Hawkeye performs a vital role in almost every facet of Navy tactical air operations, including surface surveillance coordination, strike force control, search and rescue and air traffic control.



E-2C HAWKEYE

PROGRAM UNIT COST
(CONST FY 85 $)

DEV EST	N/A M
FY 84	57.9 M
FY 85	59.7 M

COST GROWTH

FY 84-85	+ 3.1 %
TOTAL	N/A %

	FY 83 & PRIOR	FY 84	FY 85	FY 86	TO COMPLETE	TOTAL
MILCON/RDT&E	302.0	43.6	39.1	25.6	77.2	487.5
PROCUREMENT	2,509.9	318.0	365.0	389.9	1,225.9	4,808.7
QUANTITY BUY	85	6	6	6	18	121
DELIVERIES	78	5	6	5	27	121

The $365.0 million requested in fiscal year 1985 includes $341.8 million for the procurement of six aircraft and $23.2 million for initial spares.

The recurring flyaway unit cost of the E-2C is $35.2 million.

FY 85 AIRCRAFT SPARES

	$ MILLIONS
● INITIAL SPARES	$833.1
● REPLENISHMENT SPARES	776.6
TOTAL	$1,609.7

FY81	FY82	FY83	FY84
1,096	1,541	1,959	1,964

The fiscal year 1985, request for aircraft spares, or the APN-6 account, is shown here.

Funding for aircraft spares in fiscal year 1983 and fiscal year 1984 were 25 percent greater than in fiscal year 1982 and almost double fiscal year 1981.

Our collective recognition of the spares requirements is reflected in the 66.5-percent MC rate attained in fiscal year 1983 and is a component of the predicted 70-percent MC rate in fiscal year 1985.

The lower total APN-6 funding level requested in fiscal year 1985 reflects the transition to Navy stock fund financing while the real investment in aviation spares continues upward.

There are several ongoing procurement efforts which will allow us to buy more spares with less dollars.

First, for the F/A-18, we buy spares concurrent with production orders to obtain lower prices on quantity orders. We are expanding this concept to other aircraft as we gain experience.

Also, we are vigorously pursuing competition and proper pricing in spares procurements. That is a program called BOSS, or Buy Our Spares Smart. It is very effective.

The Navy Material Command has developed a procurement program which encompasses many initiatives designed to improve the acquisition of parts.

Our goals are high, but the returns are not in yet.

The benefits of both these initiatives have been recognized in our fiscal year 1985 APN-6 budget request.

Senator **Goldwater**. Are you encouraging the manufacturing of spares by the Navy?

Admiral **Schoultz**. Sir.

Senator **Goldwater**. Are you producing as many of your own spares as you can?

Admiral **Schoultz**. I don't think so. I had better ask the businessman here.

Admiral **Busey**. No, sir, we will manufacture very few spares in our six NARFS, our industrial activities.

That is usually done only to fill immediate need to repair airplanes rather than wait for long lead time to delivery from commerical sources, but as a policy, we do not manufacture our own parts.

Senator **Goldwater**. The Air Force is doing that. They are doing quite well.

I don't know if you have the ability on shipboard to get into the manufacturing, but you might look into the Air Force program and see if there is something there you might borrow or steal. It makes sense.

Admiral **Schoultz**. On some of those spare parts it seems like you might save.

Senator **Goldwater**. Relative to a landing gear system or replacing a strut, it would be possible if you had the equipment to manufacture a strut instead of waiting a long time for the manufacturer to deliver it. You might look into it. I am not advocating that you do it, but the Air Force has been doing it surprisingly well.

Admiral **Busey**. Through the joint logistics commanders we do share the lessons learned by our sister services regularly.

We will look into that.

Admiral **Schoultz**. The High-speed Anti-Radiation Missile, Harm, is a joint Navy/Air Force development program.

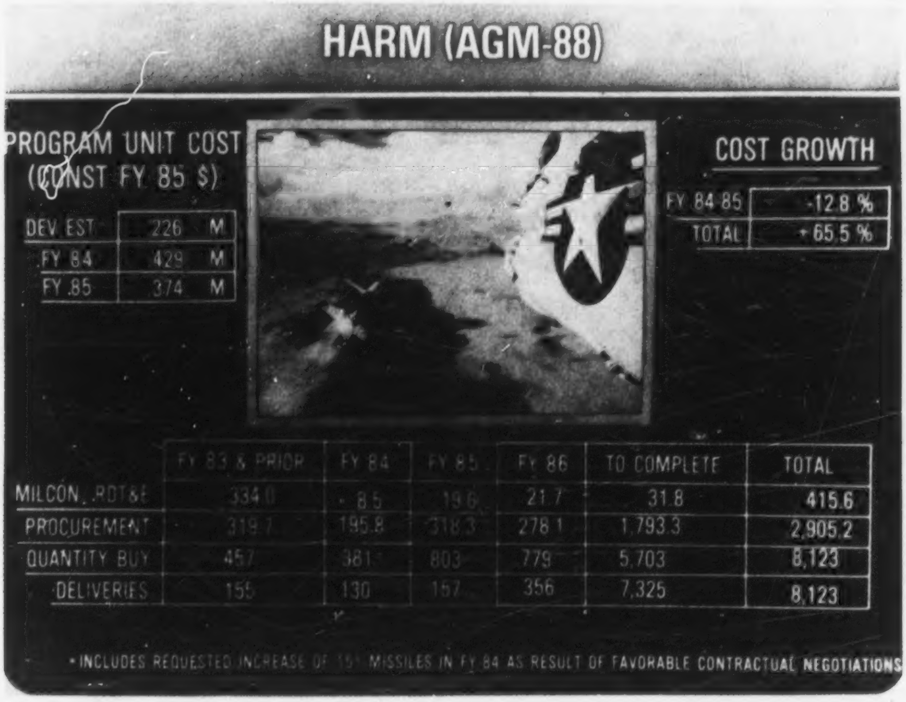
The Navy version of the missile, which became operational in November 1983, provides a lethal countermeasure to enemy air defense systems including Sam and triple A weapons.

The fiscal year 1984 procurement is being executed on a sole-source basis in which contractual negotiations have been favorable.

The Navy has requested an additional 151 missiles be authorized in fiscal year 1984 at the appropriated funding level.

The fiscal year 1985 request for 803 missiles attains a production rate offering an economy of scale which results in a 13-percent savings to the program over the last year.

We had a heck of a time getting this thing here. We have finally got it here and it looks like it is going to come in well.



HARM (AGM-88)

PROGRAM UNIT COST
(CONST FY 85 $)

DEV EST	226 M
FY 84	429 M
FY 85	374 M

COST GROWTH

FY 84-85	-12.8 %
TOTAL	+65.5 %

	FY 83 & PRIOR	FY 84	FY 85	FY 86	TO COMPLETE	TOTAL
MILCON, RDT&E	334.0	8.5	19.6	21.7	31.8	415.6
PROCUREMENT	319.7	195.8	318.3	278.1	1,793.3	2,905.2
QUANTITY BUY	457	381*	803	779	5,703	8,123
DELIVERIES	155	130	157	356	7,325	8,123

*INCLUDES REQUESTED INCREASE OF 151 MISSILES IN FY 84 AS RESULT OF FAVORABLE CONTRACTUAL NEGOTIATIONS

The $318.3 million requested in fiscal year 1985 includes $309.7 million for the procurement of 803 missiles and $8.6 million for initial spares.

The recurring flyaway unit cost of the Harm is $333,000.

Senator **Bingaman**. That became quite an issue in the conference last year. There were people on the House side who felt that this was a little expensive and that there were cheaper alternatives which had not been adequately looked at.

I notice you have a cost growth up there beginning with this program of 65 percent.

Admiral **Schoultz**. Yes, sir.

Senator **Bingaman**. What can you tell us about the terms under which this is purchased?

We are buying over 8,000 of these things.

Admiral **Schoultz**. That is our buy. The Air Force is buying a little more, I think 9,000, something like that, or about a 17,000 total buy.

That is in the program. We just got delivery of these weapons. We have them deployed [deleted]. The Congress directed us to buy or to develop a lower cost seeker for the Harm. That seeker is in the final planning stages.

In fact, it will go down to Congress within the week. The program is designed to let China Lake, our weapons lab bring on two contractors, maybe even more if they will bid on it, to try to bring in the Harm technology.

They will monitor it, look at it, and operate that competition and watch the two or three contractors, then take their version and determine which one is the best and then have one of them be a leader and the other contractor be a follower and they will make it cheaper.

The direction is to make a cheaper seeker for this missile. This thing does several things. It keeps the pressure on T.I. who is the prime contractor on this.

If he can keep his price coming down, it will have to be a lot cheaper to be competitive.

I think it is a good lever on the single-source contractor. If the program continues and we buy any more Harms, we will have a lot cheaper seeker.

Also that technology is transferable to other missiles. That is the direction of the Congress. The Congress put in the money to do that.

Senator **Bingaman**. Is that the $12 million we added into this program for research funds last year?

Admiral **Schoultz**. I think it was $20 million, Senator.

Senator **Bingaman**. When do we get this competition?

Admiral **Schoultz**. The development of competition should be in by 1986 and then it would be how long it would take them to develop it, which would probably be 1988 or 1989.

Admiral **Busey**. What we plan to do, our definitive plan, which you understand is not approved all the way through the Department of Defense yet, but our definitive plan is to have competition this fiscal year for the participants that will work under China Lake's leadership, under their management and direction, to develop the low cost seeker technology.

The decision point then will come in the fiscal year 1986 time frame to determine which one will actually go into production.

We will look at it again in 2 years to see whether it is economically feasible to tool up and go into full-scale development to bring the manufacturer along in competition with T.I.

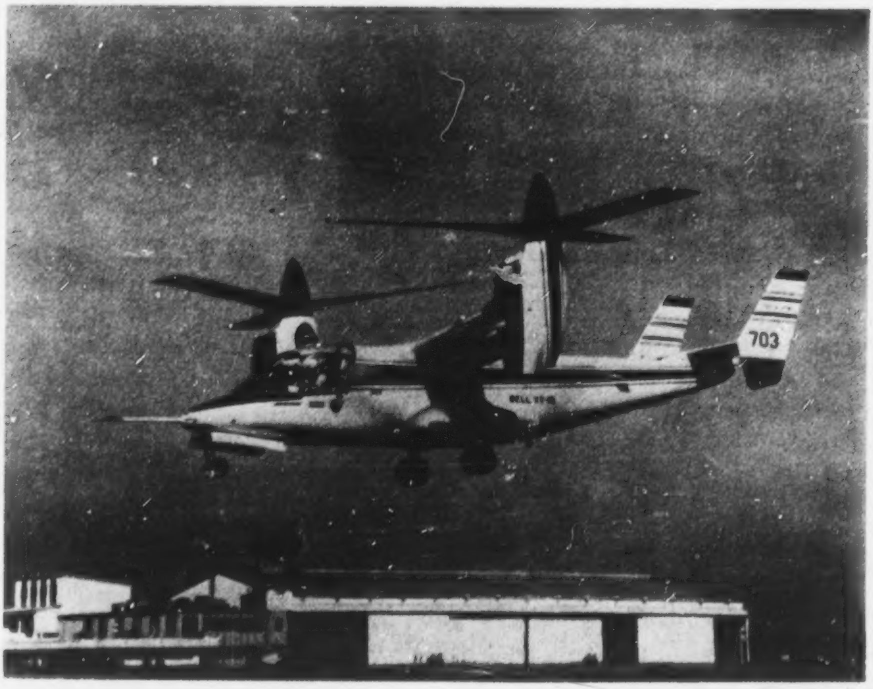
If I may address the 65-percent figure, the question you asked earlier, again, sir, this is a SAR program. That goes back to the developmental estimate which was 0.226 compared with our most recent experience of 0.374. So, that is the percentage cost growth based on that original development estimate.

The significant thing, we believe, is the 13-percent reduction that we have seen in one year due to firm fixed-price contract negotiations. The price is coming down.

Senator **Bingaman**. You expect it to continue to come down?

Admiral **Busey**. Through this other program which will continue the competitive pressures on T.I., yes, sir. We expect to see those flyaway unit costs continue to come down.

Admiral **Schoultz**. The Department of the Navy has the lead in a major joint Navy/Air Force research and development effort, the JVX program. Preliminary design work has commenced and is proceeding on schedule.



The NASA/Army XV-15 shown here yielded actual flight data which indicates that the program poses no insurmountable challenge and confirms the fact that industry considers the technology as state of the art.

Although the Army is not participating in the development of the aircraft, they plan to take part in its multimission application.

The JVX will provide a modern platform for Marine Corps medium assault lift and Navy combat search and rescue [SAR] as well as the other support missions listed on the transparency.

There is no procurement funding requested for the JVX program in fiscal year 1985. The planned initial operational capability of JVX is 1991 with U.S. Marine Corps introduction.

Senator GOLDWATER. What is your personal feeling about this aircraft? I have flown it. I am very, very high on it, not necessarily for combat use, but for a personnel carrier. I think it has great possibility, yet we are not able to get the Army excited about it. The Air Force is so so.

Admiral SCHOULTZ. The Air Force just has a small piece of it just to kind of stay with the technology.

I have also flown the aircraft. I am not a helicopter pilot, but that is an easy airplane to fly and it has a tremendous capability.

If the technology works out as well as we think it will, it has a great deal of application in naval warfare in addition to the size of the Marine lift.

It will do a beautiful job for the Marine Corps, being able to move their troops faster.

I think it is going to be a spectacular technology that will have a lot of application in the civilian world.

Senator GOLDWATER. In the civilian world there is no question. Do you believe the development of the Sikorsky counter rotor might be biting intc this idea?

Admiral SCHOULTZ. I am not that familiar with that, Senator. I know they are working on it, but I never have gotten a briefing on that.

I am not that knowledgeable of the counter rotor. Colonel Creech, program manager for the JVX, can discuss that.

Colonel CREECH. When the Deputy Secretary of Defense told us to get started with the joint program, we commissioned a joint technical assessment where we looked at conventional helicopters, compound helicopters to include the ABC, lift cruise-fan, and the tilt rotor concept.

The direction was to use advanced, mature technology. Between the ABC and tilt rotor we found that the ABC came in as a less performing airplane and it was heavier.

Senator GOLDWATER. It will be interesting to watch what happens. I think it is going to have its greatest impact on commercial use.

I can see a 100-passenger version taking people from downtown Washington to downtown New York in 40 to 45 minutes.

I think the services should keep their eyes open on this.

General FITCH. If I could comment for the Marine Corps and personally, Mr. Chairman, I would say this is probably one of the most signficant developments in any type of aviation, be it rotary wing, jet, or otherwise, that has come down the pike since 1903.

Senator GOLDWATER. I would agree with you.

Senator WILSON. Mr. Chairman, I hope we don't have to wait for civilians to appreciate that, but one day the present traffic between Los Angeles and San Diego will largely be served by aircraft of this kind.

Senator GOLDWATER. OK, Admiral.

Admiral SCHOULTZ. With your permission, sir, I would like to ask General Fitch to discuss U.S. Marine tactical aviation programs.

Senator BINGAMAN. Mr. Chairman, could I ask one more question?

SUSTAINED OPERATIONS

He says on page 3, "Eight of our 13 carriers can be deployed today fully equipped and capable of sustained operations."

Could you elaborate a little bit?

What do you mean by sustained operations?

Admiral SCHOULTZ. That really addresses primarily the aviation parts support in those carriers. You can deploy 12 or 13 of them, but they wouldn't have a full [deleted] supply in 100 percent depth and 100 percent reach of spare parts and all the supporting equipment aboard and full load of ordnance.

I am saying you can take eight aircraft carriers and load them to 100 percent of spare parts in depth and range and fully loaded with all ordnance, all the aircraft, and they would be 100 percent full and it would give them [deleted] capability.

If you deployed them [deleted] which would double your number, say, [deleted] then you would have to resupply them while they are deployed with other forces.

What we do now, if we are short of equipment, when one carrier is rotating back it swaps its extra equipment with the one which is deploying.

We also take from the shore side to fill up the carriers that are deployed. We are doing so much better. We will have the whole capability to do them all, of course, [deleted]. It is just a matter of dollars and how fast we can get those space parts bought.

Of course, we are lagging 2 years behind. We appropriate the money, as you know, and it takes 2 years before we get there. That is why we are increasing our MC rate.

Senator WARNER. If I might ask a question here.

A-6

Senator Bingaman asked about the A-6. Did you respond to the question, do you need money in the budget for continued production and if so, how many dollars for how many units?

Admiral SCHOULTZ. Our plans for the A-6, of course, aren't firm, but we wouldn't really need additional moneys to continue production primarily because we have money in the budget that was programed for closeout.

If you take the closeout money to use for advance procurement, the moneys are adequate. That is the current plan.

Senator WARNER. The Secretary of the Navy when he was here said he wants an upgrade of the airframe, the engine, and avionics in the A-6E.

Do you require funding for that in 1985?

Admiral SCHOULTZ. We have some in there, but it is primarily in the F-14 line, what is required in 1985.

I believe we have enough money in 1985 in the F-14 line to start the A-6 and we will be back with our program if it firms up next year with the whole program.

We will do the avionics and we will do the engine.

Senator WARNER. What about the flyoff between the A-6 and F-18 for all weather tactical aircraft?

Where are you in that study?

Admiral SCHOULTZ. I am not aware of the study. I know we are looking at it. They both have proposals, but we haven't made a decision on that yet, Senator.

We will have to do some more upgrading of the F/A-18 to make it all weather capable and to do the radar bombing that the Marines want.

Senator WARNER. You don't need any R&D money for the A-6 to beef up that program?

Admiral SCHOULTZ. No, sir.

Senator WARNER. Thank you, Mr. Chairman.

Senator GOLDWATER. General Fitch?

STATEMENT OF GEN. WILLIAM H. FITCH, DEPUTY CHIEF OF STAFF FOR AVIATION FOR THE MARINE CORPS

General FITCH. Thank you, Mr. Chairman.

It is a pleasure to appear before your committee again this year. I have a prepared statement that I would ask be entered for the record. My oral remarks will be a short synopsis of that statement.

First let me say, Marine aviation programs represented in the fiscal year 1985 budget are vital to the continued improvement of our combat capability.

STATUS OF MARINE AVIATION (CALENDAR YEAR 1983)

We continue to do well:
Maintaining assets.—Mission capable rate, 74% full mission capable rate, 59%.
Conserving assets.—Mishap rate—equals lowest ever, 6.13.
Readiness.—Tactical squadrons>80% combat ready.

I am pleased to report that Marine aviation is doing well. We are continuing to maintain our assets at their highest levels ever.

In 1984 we averaged 74 percent for mission capable rate and 59 percent for full mission capable rate based on a 24-hour clock.

At the same time, we are conserving our assets and this past year we matched our best ever mishap rate of 6.13.

Our overall readiness is high with over 80 percent of our tactical squadrons combat ready.

Our AV–8B program is progressing very well. We have delivered two aircraft to the Fleet Marine Force and the flight handling characteristics, performance and maintainability are reported to be even better than anticipated. The aircraft has been extensively tested and its final OPEVAL is scheduled to commence this August. We do not anticipate any problems as the aircraft meets the OR today. This year's request is $939.8 million for 32 aircraft.

Our two-seat trainer, the TAV–8B, is funded within the AV–8B R&D line and $59.3 million of the $70.4 million requested for RDT&E is for this development. We expect our first TAV–8B flight in December of 1986 with an IOC of late fiscal year 1987. The timely development of the "T" is critically important as our V/STOL pilot requirement more than triples over the next 5 years.

The Marine Corps is currently operating three tactical F/A–18 squadrons and our pilots consider it to be the best fighter in the world. We will be deploying two squadrons abroad the *Coral Sea* in late 1985. Last year I said, "Initial operational experience with the F/A–18 at El Toro indicates that the aircraft fills the multiple mission requirement extremely well." We have now completed more than 1 year of *Hornet* operations and more than 11,000 flight hours. Our initial expectations have been exceeded in every aspect.

Air-to-air performance, ground attack, range, survivability and reliability and maintainability have proven superlative. The F/A–18 has rapidly become the standard against which other multimission, fighter/attack aircraft should be measured. Last year we believed we had a winner. This year we believed we have proved it. The Department of the Navy procurement request will permit our transition to stay on schedule with our next squadron to begin training in January 1985.

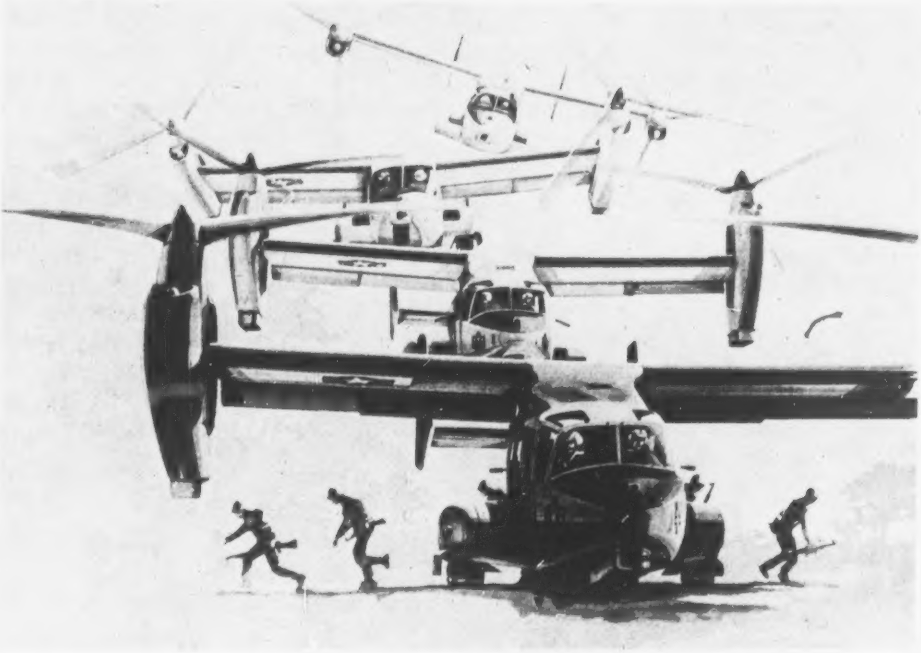
We continue to operate the A–6E Intruder to provide vital close air support and interdiction during adverse weather conditions. In 1983, our mission capable rate for the A–6E was 70 percent.

In the important area of electronic warfare, the EA–6B provides critical support for operations in sophisticated threat environments. At this time, we have an A-6E squadron and an EA-6B detachment deployed aboard *Saratoga*. The Marine Corps fully supports the fiscal year 1985 procurement of these two important aircraft.

In rotary wing aviation, I would particularly note two programs, the AH-1T Sea Cobra and the JVX Tilt rotor program.

The Marine Corps has a small active force of attack helicopters composed of two AH-1T squadrons and one Vietnam era AH-1J squadron. We are currently short AH-1T aircraft in both squadrons. Our reserve squadron, which operates the AH-1J, is also critically short aircraft and has only 8 of 24 aircraft authorized. In fiscal year 1985 we are asking for $214.4 million for procurement of 22 AH-1T aircraft. Recurring flyaway cost is $6.7 million. These aircraft will have the capability to shoot Hellfire, Tow, and Sidewinder and are programed to have the enhanced T-700 engine package incorporated.

This procurement, which will have a firm fixed-price contract, will permit us to bring our AH-1T squadrons up to authorized levels while commencing the transition of our third active squadron from AH-1J's to AH-1T's.



The Marine Corps enthusiastically supports the JVX tilt rotor program. Normal attrition of our current medium assault helicopters, the CH-46, dictate a 1991 IOC for JVX. The tilt rotor promises a giant step forward for rotary wing aviation. In my view, a step comparable to the introduction of the jet engine into fighter aviation. Preliminary design wind tunnel efforts are progressing very well and we expect to be 50 percent complete by the end of spring. A decision for full-scale development of JVX will be made about June 1985, and our fiscal year 1985 funding request is critical to reach that FSD decision point.

The CH-53E heavy lift helicopter continues to perform well in support of Marine ground forces. A training element was activated in October 1983 and we plan to standup our third tactical squadron early in fiscal year 1985.

The Department of the Navy request for $320.5 million includes advance moneys for multiyear procurement of 14 aircraft per year for fiscal years 1986-89.

The Marine Corps strongly supports this request.

In the area of initial flight training, the Marine Corps accounts for approximately one-third of both the flight instructors and students in the Naval Aviation Training Command.

We must have timely replacement of the TA-4J and T-2C aircraft in our advanced training, and accordingly, we strongly support the development of VTXTS training system.

In tactical aviation weapons, we consider two precision guided munitions, Laser Maverick and Hellfire, essential to counter the projected armor threat. Laser Maveric, our precision-guided missile choice for TACAIR, has been optimized for the close air support mission. Hellfire is designed for rotary wing aircraft where it complements Tow and affords greater aircrew and aircraft survivability. Both weapons are vital to insure aviation's ability to properly support the Marine ground commander. In addition, we strongly support the 12R Maverick as a deep air support/interdiction antiarmor weapon.

A major benefit of the modernization of our active forces aircraft and weapons, is the transfer of newer, more capable equipment to our Reserve forces. We have already introduced the A-4M, will soon introduce the F-4's and are modifying our AH-1J aircraft to provide an antiarmor capability. As a result of these actions, our Reserve wing's capabilities are and will continue to be improved.

In summary, Mr. Chairman, your previous support for our programs is greatly appreciated. I would ask your continued support for this year's request which will continue our modernization efforts and enhance our readiness.

Thank you.

[The prepared statement of General Fitch follows:]

PREPARED STATEMENT OF LT. GEN. WILLIAM H. FITCH, U.S. MARINE CORPS, DEPUTY CHIEF OF STAFF FOR AVIATION

Mr. Chairman, distinguished Members of the committee:

It is my privilege to again address the committee on the status of Marine Aviation, a key element in the capability of the Navy-Marine Corps team to project power ashore. At the outset, I would like to thank the committee for your strong support over the past year; support which has enabled us to further enhance and improve our combat capabilities. 1983 was an excellent year for Marine Aviation as we continued to establish new highs for aircraft readiness. We attained 59 percent Full Mission Capable and 74 percent Mission Capable, based on a 24-hour clock, while we continued to conserve our valuable assets by matching our all-time low mishap rate (6.13 mishaps per 100,000 flight hours). Throughout this past year we have continued to introduce new, vastly improved, weapons systems to the Fleet. These new weapons systems are meeting or exceeding all our expectations. We are combat ready and working hard to be even more ready. Several aviation programs are of particular interest and I would like to address those now.

Of major concern to Marine Aviation is the very tightly constrained flying hour program [FHP]. Our tactical flying program requirements have increased over the past three years as our pilot/NFO availability has improved through higher retention. Three years ago the Marine Corps was short 581 pilots and 124 NFO's. Today we're at 100 percent in Naval Aviators and nearly at proper strength for Naval Flight Officers. Our capability to meet this greater tactical flying requirement has also increased, through force modernization and improved aircraft readiness, however, flight hour funding has not kept pace with requirements. Congreessional action in fiscal year 1984, which improved to a limited degree that year's funding, was most welcome and greatly appreciated. Our fiscal year 1985 program is structured for attainment of 83 percent primary mission readiness [PMR] to TACAIR and we project funding to be adequate to meet this goal. Your full support for our fiscal year program is vital to our continued readiness.

The modernization of Marine fighter-attack [VMFA] forces is well underway. With three strike-fighter squadrons now operating at MCAS El Toro, Santa Ana, Calif., it is readily apparent that we have a truly superb fighting machine in the F/A-18 Hornet. This is an aircraft that can gain and maintain air superiority within the amphibious objective area and over the battlefield. At the same time its ability to navigate, to locate targets and accurately deliver ordnance, provides a tremendous force multiplier, and as such, enhanced support for the ground commander. Equipped with state-of-the-art ordnance delivery systems and a night, as well as under-the-weather capability, the Hornet represents a quantum leap over the venerable F-4. We continue to be impressed with the handling characteristics, performance and maintainability/readiness of the Hornet. The fleet is extremely pleased with the F/A-18 and fiscal year 1985 procurement funds will continue our fighter/attack (VMFA) modernization. In early fiscal year 1985, VMFA-115 from Beaufort, S.C. will enter transition training at VFA/125, the joint Navy/Marine F/A-18 training squadron located at NAS Lemoore, Calif. Modernization will culminate in the early 1990's with 12 VMFA squadrons having replaced the F-4 Phantom II, which served us so well.

The AV-8B Harrier program, as in previous years, continues to be the key element in the modernizaiton of Marine Corps light attack forces. Four Full Scale Development (FSD) aircraft are progressing well through a demanding flight test program. Deficiencies identified in systems and performance in the course of inital evaluations have been addressed by the development team and solutions are at hand. Subsequent evaluation of improvements, including a recontoured inlet, confirms that performance has been improved and meets Operational Requirements. Pilot production is proceeding on schedule. VMAT203, our AV-8 training squadron, accepted the first AV-8B on January 12, of this year and is projected to have 8 AV-8B aircraft on hand by August 1984. The introduction of the AV8B will result in more effective and responsive Close Air Support [CAS] for the ground commander. The Harrier's responsiveness is inherent to the aircraft due its basing flexibility. Its ability to operate from grass fields, roads, ships or prepared airstrip permits locating the ground commander's fire support close to the forward lines. This same flexibility may well result in the AV-8B being the only fixed wing close support available ashore during the early days of an amphibious assault.

The key to a safe and efficient transition to an all V/STOL light attack force is the TAV-8B, a two seat trainer version of the AV-B. A low risk technical development, the TAV-8B, with current funding schedules, can be delivered in fiscal year 1987. This will be in time to meet the second year of our peak training demand which begins in 1986.

Fiscal year 1985 funds are requested to keep the vital AV-8B and TAV-8B programs on schedule. Our first tactical AV-8B squadron will stand-up during fiscal year 1985 and our light attack modernization efforts will ultimately result in an eight squadron V/STOL force by the early 1990's. The force will provide highly effective and responsive close air support for our infantry units.

The EA-6B, the free-world's best electronic warfare air-craft, continues to be key in daily operations and training as well as contingency planning. MCAS Cherry Point, NC is home for our 15 plane squadron, VMAQ-2, from which we maintain detachments both aboard aircraft carriers and in the Western Pacific. The importance of this aircraft grows daily in view of the Soviet electronic order of battle, which features an ever more sophisticated and dense AAA, Sam, fighter, and electronic warfare threat. Our 15 plane squadron cannot meet all requirements and the continued procurement of the EA-6B is vital to ensure Navy/Marine and National success on the electronic battlefield of the 1980's and 1990's. We look forward to the addition of 3 aircraft to VMAQ-2 by 1988.

The A-6E Intruder remains the only aircraft in the DON inventory capable of providing all-weather, day or night close air support and interdiction capability. I have commanded two A-6 squadrons, one of which was in combat in 1967-1968 where we flew the night low-level attack missions against North Vietnam. I continue to fly the A-6E. It is a superb aircraft, and with its Laser Designator Ranger [LDR] and Forward Looking Infra-Red [FLIR] system has a proven capability to provide both night and all-weather CAS ordnance delivery. We urge you to support the procurement of the six A-6E's in the 1985 budget submission.

Modernization of Marine Aviation's heavy lift helicopter community is progressing extremely well with the introduction of the CH-53E Super Stallion into Fleet Marine Forces. With two complete 16 plane squadrons now operating, one at MCAS (H) Tustin and one at MCAS(H) New River, we are regularly supporting Marine ground units at Camp Pendleton, Calif, and Camp Lejeune, N.C. More recently we completed our first deployment of the Super Stallion aboard ship. As part of the Marine Amphibious Unit composite helicopter squadron, the CH-53E performed admirably in support of Marines in Lebanon. In October of 1983 we activated a CH-53E training element at MCAS(H) Tustin and they have already received their first of ten aircraft. In October of this year we will stand up our third CH-53E tactical squadron, also at MCAS(H) Tustin. Three squadrons will marginally meet our current heavy lift requirements for ship-to-shore movement and we have a recognized requirement for a minimum of six squadrons. Fiscal year 1985 funding requests include advance funding for multi-year procurement of the CH-53E in fiscal year 1986/fiscal year 1989. Your support of this request will insure a timely, cost efficient modernization of Marine heavy lift capabilities.

The AH-1T Sea Cobra is a helicopter program of great importance. A small, agile attack helicopter, the Cobra with the T-700 engine is one of our most versatile platforms. The Cobra, a true milti-mission aircraft, provides armed escort for our troop assault aircraft, anti-armor capability with TOW and Hellfire (IOC fiscal year 1986) and clsoe in fire support for ground forces with forward firing rockets and a 20MM gun. The AH-1T has been further modified to develop a self-protection capability with the addition of an AIM-9 (Sidewinder) capability. These modifications resulted in a new growth of 1,000 pounds to the basic airplane, which left the Cobra substantially underpowered with the T-400 engine twin pack. The incorporation of the GE T-700 engine in the fiscal year 1985/fiscal year 1986 procurements, due to prescient congressional action in fiscal year 1984, will provide a quantum increase in both operational capability and safety in all environments. The T-700 twin pack has been installed in a developmental HA-1T and the performance of the aircraft is most impressive. The Cobra community, due to weapons system versatility, remains our mose heavily committed aviation community. Fiscal year 1985/fiscal year 1986 procurement is vital to alleviate existing critical inventory shortfalls in our four AH-1T squadrons. The procurement of these 44 aircraft will permit the proper equipping of our anti-armor and close-in fire support forces.

A major concern is the rapidly aging and declining inventory of CH-46E's, our medium lift assault transport. To avert an early 1990's critical shortfall in medium lift, modernization efforts are embodied in the Joint Services Advanced Vertical Lift Aircraft (JVX) or tilt rotor. As a replacement for the CH-46E, JVX provides a 250 knot assault transport that is self-deployable worldwide. Capable of lifting 24 Marines up to a 200 nautical mile mission radius, the JVX will be capable of rapidly penetrating deep into enemy rear areas, and bypassing adverse terrain and weather threats. It represents a quantum leap in strategic mobility for conventional forces where its global self-deployability provides the responsiveness to rapidly marry-up airlifted Marines with prepositioned equipment in Norway and Maritime Prepositioned Ship [MPS]. Further, to the tactical commander, it represents a heretofore unavailable advantage in battlefield mobility and flexibility. JVX meets the need for increased stand-off distances, further enhancing over-the-horizon amphibious assualts with its 250 knot speed, high transport productivity and ability to execute a two wave assault at a 50–110 nautical mile radius without refueling. Its tactical versatility complements both the Landing Craft Air Cushion [LCAC] and CH-53E. RDT&E funds requested in fiscal year 1985 are important to the maintenance of our development schedule which will lead to a 1991 delivery of JVX to Fleet Marine Forces.

The magnitude of the Soviet armor threat continues to increase and as a result Marine Aviation has devoted a great deal of attention to weapons systems that can successfully engage enemy armor at stand-off distances. We feel that Precision Guided Munitions [PGM's] can best meet our anti-armor requirements for close air support. Two of these systems are Laser Maverick and Hellfire, both of which can meet and defeat the threat head-on without unacceptable attrition of friendly aircraft.

Close air support is of paramount importance to Marines and the requirement for a fixed wing deliverable PGM in this arena is met by Laser Maverick. This laser guided munition is compatible with the F/A-18 and AV-8B as delivered and we are modifying the A-6E and A-4M to give all our fixed wing the same type of aircraft standoff survivability. The key element in the optimization of Laser Maverick for the CAS environment is the ability of the ground commander to both select and designate the greatest threat to his unit or mission. With its 300 pound warhead, even a near miss will damage both hardened surface targets and the most heavily armored Soviet tanks. Laser Maverick is also designed to provide the crucial margin of safety for friendly troops in close air support operations with a self dudding feature, and its shoot-and-leave performance provides the requisite aircrew safety. A fourth quarter fiscal year 1985 IOC looks solidly achievable.

Hellfire is the new laser guided PGM being procured for use by our attack helicopter force, where it represents both a major improvement over, and a complementary option to TOW. Hellfire, affords the aircrew the option of a shoot-and-leave operation, unlike TOW which requires the helicopter to remain vulnerable while the missile is guided in flight. As with Laser Maverick, the ground commander can select and designate the threat and the helicopter, after firing Hellfire, can depart before entering the enemy's anti-aircraft kill zone. With a fiscal year 1986 IOC, Hellfire will provide the ground commander with a much needed increase in tank killing punch. This capability will be operational first with our Vietnam era AH-1J's which presently have no anti-armor capability.

A complementary weapon to Laser Maverick is the Imaging Infra-Red (I^2R) Maverick, a Deep Air Support [DAS] weapon. Lacking the ability to discriminate between friend and foe heat signatures, the I^2R Maverick is not suited to the CAS arena, however, it is ideally suited to interdiction missions against armored targets beyond the Fire Support Coordination Line [FSCL]. Sharing its warhead with the

Laser Maverick, it represents a less expensive tank killing alternative for deep enemy target areas.

Additional developments in aviation ordnance include the GAU-12 25MM gun pod, designed for the AV-8B anti-air and anti-armor missions, and Gator, an air deliverable, scatterable mine which will deny, canalize and attrite armor. Both are on track for fiscal year 1985 IOC. Additionally, the GPU-5A 30MM gun pod is to be tested to support an fiscal year 1987 IOC as an enhancement to reserve aviation A-4 and F-4 anti-armor and CAS capabilities.

A critically important program in support of Marine Aviation is the aviation logistics support ship (TAVB). This ship provides sealift movement of an aviation Intermediate Maintenance Activity [IMA] to support the deployment/employment of the Aviation Combat Element [ACE] of a MAGTF during contingency situations. The TAVB represents a means to repair spares while enroute and be operational upon arrival. The request for $42.8M in the Shipbuilding and Conversion Navy [SCN] appropriation in fiscal year 1985 will permit the delivery of the first of two TAVBs in fiscal year 1986.

Marine Aviation is a key element of Naval Aviation and we share the same undergraduate aviator and NFO training program. The Marine Corps currently provides approximately one-third of both the flight instructors and students in the Naval Aviation Training Command. Accordingly, we are very interested in the development of the new Undergraduate Jet Flight Training System [VTXTS]. VTXTS is comprised of the aircraft, simulators, academics and a training management system. The aircraft, a derivative of the in-production British Aerospace Hawk, will replace the aging fleet of T-2's and TA-4J's now flown in the intermediate and advanced phases of jet training. The fiscal year 1985 request for $113.4M will keep the Hawk, a vital program that the Marine Corps fully supports, on schedule for an IOC of fiscal year 1991.

We are also pursuing modernization efforts in the areas of airspace command and control to improve and enhance our overall air defense capability. Tactical Air Operations Center—1985 (TAOC-85) is a modular, state-of-the-art, real-time air control system that will provide semi-automatic control of anti-air weapons including interceptor aircraft and surface-to-air missiles. The modular design of the system will greatly increase its mobility and reduce strategic air/sea lift requirements. Scheduled to commence operational testing in fiscal year 1985, this new TAOC will significantly enhance Marine Aviation command and control capability. In 1982, after reviewing TAOC-85, the USAF joined the program and will also procure this modern technology system.

To complement the air control capabilities of TAOC-85, we plan to introduce in fiscal year 1985 the first AN/TPS-59 Radar which was procured in fiscal year 1983.

We are developing the Marine Air Traffic Control and Landing System (MATCALS) to replace our worn out and obsolete air traffic control system which was fielded in the early 1960's. A highly mobile all-weather air traffic control system, MATCALS will extend the Navy's automated carrier approach capability ashore, and provide the capability to increase sortie rates while improving safety of flight. MATCALS deliveries to the Fleet Marine Forces for use at expeditionary airfields are scheduled to commence during 1985.

We are also continuing procurement of our major anti-air weapons, the Improved Hawk and Stinger missiles. Our funding profiles continue to move us toward attainment of a 60 day stockage level in both systems.

The introduction of new weapon systems into our active forces is also providing for the modernization or our reserve wing's assets. In our rotary wing community, the procurement of 44 AH-1T's in fiscal year 1985/fiscal year 1986 will free-up sufficient AH-1J assets to raise our reserve AH-1J squadron from 30 percent of PAA to full strength. Modernization of our active light attack forces with the AV-8B will likewise improve the light attack capabilities in the reserves by making the very capable A-4M available to the 4th MAW. The A-4M is equipped with the Angle Rate Bombing System [ARBS] and more powerful engine than the older A-4E/F's it replaces, and further capability enhancements include modifications to permit delivery of Laser Maverick. A little over a year ago our first A-4M's moved into the Fourth Marine Aircraft Wing [MAW] and they have done well. One of our fighter/attack squadrons has received the very capable F-4J (Super J) and another will receive the extremely capable F-4S; in both cases replacing the capable but older F-4N, as we introduce more F/A-18's into the active force. Congressional action over the past 3 years has provided eight KC-130T aircraft and our reserve air refueling capability is greatly improved as a result of this strong support.

Last year I indicated that Marine Aviation was embarking on an era of unprecedented modernization. Your support over the year has kept that modernization on schedule. We are readier than ever and we look forward to your continued support which will enhance our capability to meet the modern threat.

This concludes my formal remarks. I am ready to answer questions. Thank You.

Senator GOLDWATER. Thank you very much, General.

We will proceed with questioning. We will follow the 10-minute rule. We will go around as many times as you want.

I will ask both you gentlemen, General Fitch and Admiral Schoultz, a question.

An article appeared in the Washington Post either yesterday or the day before, as a result of hearings held in this room, which indicated that our state of readiness in 1983 was not up to our state of readiness in 1980.

NAVY MARINE CORPS AVIATION READINESS

I should like to ask both of you, are the Navy and Marine Corps readiness rates for aviation squadrons higher or lower in 1983 compared with 1980?

Admiral SCHOULTZ. I don't have my 1980 figures in front of me, but I would think they are probably about double, they are that much better.

We are really making progress. Just today as we were talking about the MC ratings, I took out of this morning's traffic because I read that article—we get a daily report on all these things, from the five carriers that are deployed. The *Midway* is in the Indian Ocean just off the Persian Gulf, 79 percent mission capable.

The *Independence* is en route to the North Sea out of the Mediterranean, having just left off Lebanon. She is 82 percent mission capable.

In the Philippines the *Kitty Hawk,* steaming en route to Indian Ocean, is 80 percent mission capable.

In the Caribbean the *America* is 89 percent and the *John F. Kennedy* off Lebanon is 83 percent capable.

We have not seen the numbers in the over eighties in my recollection and certainly in 1980 they were down in the sixties.

Senator GOLDWATER. General Fitch?

General FITCH. In the Marine Corps we are significantly higher in 1983 and 1984 than we were in 1980

As I mentioned in my oral remarks, over 80 percent of our squadrons are combat ready.

This would compare to 60 to 65 percent if you went back to 1980.

Senator GOLDWATER. Thank you.

Are your aviation units, both Navy and Marine, more or less combat ready today than they were 3 years ago?

Admiral SCHOULTZ. Much more in every respect.

Senator GOLDWATER. That indicates that they have improved. We had some real arguments the other day whether or not the improvement was based upon the acquisition of new equipment.

I maintain that new equipment is not necessarily how you judge the combat readiness of an outfit.

What would you attribute this improvement in combat readiness to, equipment or men?

Admiral SCHOULTZ. I would think it is a combination. My answer would be a combination of both, Senator. Our personnel, of course, are improving all the time. We are getting a greater number of high school graduates.

All of our discipline is better by far. They are getting better training. Of course, they are getting newer and better equipment. They are getting paid better so they are happier.

I would have to say it was both.

General **Fitch**. I would give essentially the same answer, Mr. Chairman.

In the case of the Marine Corps, for example, last year nearly 95 percent of all the recruits coming into the Marine Corps were high school graduates. There has been a quantum improvement in the quality of our personnel.

At the same time we have had extremely significant improvement in capability of equipment, like the F/A-18, CH-53E, and the enhancements that these types of equipment bring in.

Coupled with that is improved training and we feel we are the best in our history.

QUALITY OF PILOT TRAINEES

Senator **Goldwater**. Is the quality of pilot trainees keeping up in Pensacola?

General **Fitch**. Yes, sir.

Admiral **Schoultz**. Yes, sir. We are increasing the standards. We have a long list of over 500 people who are waiting to get into the program. It gives you a tremendous quality cut coming in. We really stretch them.

I have been convinced in my review of the youngsters down there I would just hate to have to compete with them. They are super youngsters.

Senator **Goldwater**. Would you say the same thing General Fitch?

General **Fitch**. Yes, sir, I would agree with that.

Again, I would hate to compete in this day and age with those young people.

Senator **Goldwater**. That is all I have right now.

Senator Kennedy?

Senator **Kennedy**. I apologize for being absent. You probably know there is an Air Force program that brings in newly selected generals to talk with Members of Congress and the Senate. This program I was involved in earlier this afternoon. It was quite interesting and helpful.

A-6E

I would be interested in asking General Fitch about the Navy's fighter request. I saw in the testimony here you indicated you intend to continue to purchase the A-6E's. I see there are six more in the budget submission.

I believe those are the planes used in Lebanon, one of which was lost.

Do you have any observations about whether those are the right kind of aircraft to use in that kind of mission?

Considering the various mixes and the quantities that are going to be authorized for the various aircraft, I am interested in whether you have any judgment prospectively about whether that is the kind of aircraft that should be used in that kind of undertaking?

General FITCH. First, let me say, Senator, that was a Navy squadron in that particular instance. For that mission, for the threat that was involved, I thought the aircraft that were assigned were perfectly adequate.

Senator KENNEDY. Are there more effective kinds of aircraft?

General FITCH. In the case of that type of target, I don't think you could have found a more effective aircraft.

Senator KENNEDY. I want to thank you for your testimony up here. I will have a chance to review it.

Again, I apologize for not being here earlier.

Thank you very much.

Senator GOLDWATER. Senator Warner?

Senator WARNER. Thank you, Mr. Chairman.

HARRIER

Returning to the Harrier, what is the unit flyaway cost of this airplane as opposed to its nonrecurring flyaway cost which you provided in your testimony?

General FITCH. The recurring flyaway cost is $18.3 million.

The nonrecurring is 19.3.

Senator WARNER. How does that compare with the other tactical aircraft that are available for the same purpose?

It is not comparable to this one, but you have made a side-by-side comparison.

General FITCH. The recurring flyaway for the AV-8B is 18.3. If you compare that to the A-6, the A-6 is 23.9. The EA-6B 26.3. F-14, 32.7, and the F-18, $21 miilion. The nonrecurring flyaway cost for those aircraft mentioned would be somewhat higher.

Senator WARNER. Today the communications between our units are so important. Where do the Navy and Marine Corps aviation stand in relation to U.S. Air Force aircraft?

That is particularly true of secure voice.

General FITCH. It requires coordination. It depends on the theater in which you would be operating. We have exactly the same system. We are looking at the Have Quick [deleted] system that the Air Force has been working on.

Senator WARNER. In operating in the same theater you do not feel you have any problems with secure voice?

General FITCH. There will probably be some problems, but not equipment problems as such.

Admiral SCHOULTZ. We don't have any problems now, Senator, but in the future with JTID's coming along, we are working on a common ground in which to meet on the two versions of the JTID's.

Ours is primarily [deleted] and the Air Force is primarily [deleted]. They are working on this program.

Of course, we have JTID's [deleted]. For the first time it will be installed in the aircraft.

Those two programs will have to come together. It is already in the plan [deleted.]

We could put all of that in the airplane except it is terribly expensive to do both versions.

Right now the Navy has one progam, the Air Force has another. [Deleted].

Senator **Warner**. When do you think you will have that?

Admiral **Schoultz**. [Deleted] it is predicted. If you ask my chances on its getting there [deleted] you know they canceled the whole program last year, said stop because the contractor got the cost out of line.

They stepped on him a bit. He got somebody else with them. They have squared it away and they have cost under control and they think he is going to make it.

Senator **Warner**. I understand you plan to outfit the 15th deployable carrier with a reserve airwing. This is a concept I and other members of the committee have been pushing for some time.

Will you describe the likelihood of that occurring on schedule and what is that schedule?

Admiral **Schoultz**. To have a full-up round, with all the aircraft, is going to require more buying of A-6's.

Concerning their availability to deploy, the fighters are changing to F-14's this year and we will have two squadrons of them.

The other two I think are programed in 1988. So, we will have the fighters and we should have the attack aircraft by 1988.

We will have the fighters and attack aircraft and we will have E-2C's.

What we won't have is A-6's by that time. The time to get A-6's into the reserve, I think, unless we change the buy, will be way in the out years.

That is the only effort that we have not covered in the 15th wing. I would say that you could deploy the fighters with the F/A-18 attack capability with the E-2's and put them on a carrier with the helicopter support by 1990.

Senator **Warner**. I will give you the opportunity to provide that for the record.

Admiral **Schoultz**. Thank you, sir.

[The information follows:]

15TH DEPLOYABLE AIR WING

The 14th air wing, which is an active air wing, will stand-up in 1987 and be deployable in 1988. We are currently modernizing both Naval Reserve air wings. One of the Naval Reserve air wings will be deployable coincident with the 14th active air wing, giving us 15 deployable air wings in 1988. This Naval Reserve air wing will consist of F-14, F/A-18, A-7E, E-2C, EA-6A, SH-3G, and KA-3B aircraft.

Senator **Warner**. Thank you, Mr. Chairman.

Senator **Goldwater**. Senator Wilson?

Senator **Wilson**. Thank you, Mr. Chairman.

Admiral Schoultz, what is the Navy currently using for aggressor aircraft?

F-5E AND F-5F

Admiral **Schoultz**. Primarily F-5E's and F's that are working very well. We put an awful load on those aircraft because we operate them in a full ACM environment all the time.

We are maintaining over 90 percent availability on the aircraft.

We also use some A-4's.

Senator WILSON. Considering the type aircraft that your aviators might have to deal with and considering the advanced state of the art of real aggressor aircraft, do you think that what you are presently using offers a sufficient challenge to your aviators?

Admiral SCHOULTZ. It offers a challenge. Whether we would like to have more and we would like to have better, certainly in the near term we are going to need more because the introduction of the F/A-18 will drive a requirement for more aggressor aircraft.

We think we should be able to upgrade them because the Mig-23 is being sold to an awful lot of countries around the world. If that threat spreads out, we will need better aggressor aircraft.

We have an aggressor program of 4 in 1984, 8 in 1985, and 12 in 1986. We may possibly have to expand that. It is a 24-aircraft program.

Senator WILSON. Twenty-four total?

Admiral SCHOULTZ. Yes, sir, currently.

Senator WILSON. I have a great interest in that on your behalf. I make no bones about the fact, Mr. Chairman, I think it is an interesting candidate to fill that role and improve the aggressor aircraft.

I don't know if you have had the opportunity that the Air Force has to evaluate that, but it seems to me that it fulfills the needs for aggressor aircraft, for a different plane that your pilots are not familiar with in terms of their own familiarity with aircraft they are flying.

Admiral SCHOULTZ. We have had three flag officers fly that aircraft. All are test pilot graduates, one of whom is here. Admiral Gillcrist has flown it, Commodore Wilson flew 3 hops in 1 day. Admiral Hogan from our TPS school has flown it also.

Everyone has come back and been enthusiastic about the aircraft and its capability to fly to all corners of the envelope.

Commodore Wilson flew 3 hops in 1 day. He said all they did was refuel it. We are very excited about it.

It is a very, very competent airplane. There are not many around.

Senator WARNER. I concur in the observation of the gentleman from California.

Could you use some other words other than enthusiastic and exciting? It is just a very technical, competent, and capable aircraft, it is my understanding. It gives the U.S. pilot real support in terms of a combat scenario.

Admiral SCHOULTZ. I would like to ask Admiral Gillcrist, who flew it, to respond. He may use some other terms than exciting.

Admiral GILLCRIST. I got 2 flights in it 5 months ago. It possesses all the acceleration——

Senator WARNER. The tight turns?

Admiral GILLCRIST. Flying qualities, turning performance, weight ratio, and acceleration that will replicate the kind of threat we expect to see.

Senator WARNER. In the Soviet aircraft inventory?

Admiral GILLCRIST. Yes. It is an extremely well engineered airplane with good flying qualities.

Senator WARNER. The price is right, too, isn't it?

Admiral GILLCRIST. I am not competent to comment on that.

Senator WILSON. I am told by others who have looked at it it is one of the major advances.

Admiral Schoultz, let me ask you about the request in fiscal year 1985 for nine PC-3's.

If we maintain a 9-per-year rate, is that going to be adequate to provide you with sufficient aircraft to replace the P-3A's and P-3B's before they reach the end of their 20-year life cycle?

Admiral SCHOULTZ. Yes, sir. That will give us an all P-3C force in the regular Navy by 1992. It will aid dramatically in the reserves getting the upgraded P-3B's with the TACNAVMOD in it.

Senator WILSON. Am I to infer that you very strongly support the nine requested?

Admiral SCHOULTZ. Yes, we support the budget. Affordability is the only reason we didn't come up with more earlier.

We had asked for five and got nine. I wish we could do that with some of our other programs.

Senator WILSON. Thank you, Mr. Chairman.

Senator GOLDWATER. Senator Kennedy?

A-6

Senator KENNEDY. General Fitch, just to get back to the A-6, for the past 2 years the committee has encouraged the Marines to consider transferring the A-6's to the Navy in exchange for the F/A-18. I believe you have resisted this recommendation.

I recognize the A-6 currently represents your only all-weather attack capability. It now appears possible to expand the F/A-18 capability to perform an all-weather attack mission.

Will you tell us what is the Marine Corps' position?

General FITCH. We plan to retain the A-6. If you were to go back 2 years, General Barrow was one of the prime supporters before the Congress to retain the A-6 in production. His words were, in essence, that we have to have that capability in order to provide the all-weather close air support for that marine on the ground.

Senator KENNEDY. What is the position of the Marines on the proposed modernization of the A-6E?

General FITCH. We support the improvement of the A-6E.

Senator KENNEDY. Just your own personal opinion, not the official Marine Corps position, would you consider a two-seat F/A-18 modified to perform the all weather attack mission to be an acceptable replacement for the A-6?

General FITCH. In my personal opinion, if the aircraft were in the proper configuration, it could be.

Senator KENNEDY. What modification would be required to give the F/A-18 an all weather attack capability?

General FITCH. You mentioned the two-seat aircraft. In our view, that would be absolutely mandatory because you have to have two people in the airplane, as we see it, for all weather close air support or any type of all weather mission. In that case we would have a bombardier-navigator in the rear seat.

As to the absolute minimum configuration that we would require, it would be the capability to work with the radar beacon forward air control which we refer to as RABFAC. We would want a raster capable heads-up display which would provide forward looking infrared [FLIR] imagery so that the aircrew could effectively fly close to the ground at night at very high speeds. A navigation FLIR is required to provide this imagery. That would be the minimum configuration.

Senator KENNEDY. We talked a few minutes ago about the survivability of the A-6 in a given circumstance, but on a broader issue of survivability, given the survivability concerns that have been expressed in the past about the A-6, would a two-seat F/A-18 be a suitable alternative?

General FITCH. Yes, sir, it would be.

Senator KENNEDY. In your personal opinion, would an F/A-18 that is modified be more or less survivable than the A-6?

General FITCH. That would depend entirely on the threat you were encountering, Senator.

Senator KENNEDY. For most of the missions?

General FITCH. For most of the missions that the Marines would be concerned about over land, my personal view is that the two seat F/A-18 would be a better solution. That, of course, does not apply to Admiral Schoultz's problem, which is war at sea——

Senator KENNEDY. What are the survivability problems with the A-6?

General FITCH. Again, that goes back to whatever the threat happens to be. If you look at some of the aircraft that the Soviets have fielded now, such as the SU-27 which becomes operational in just a few months, an aircraft that compares very favorably in fighter capability with, say, the F/A-18, or if you look at the Mig-29 which would compare very favorably with the F-16, withy the Mig-29 already operational, those aircraft have a significant look-down/shoot-down capability.

In fact, it is my understanding that part of this capability was provided by an American engineer who sold quite a bit of radar information to the Soviets, which was unfortunate.

In that case of the F/A-18 would have a very good look-up/shoot-up capability which the current A-6 does not have.

There has been some talk about giving the A-6 that capability. That would be an immediate advantage of the F/A-18.

A second one as a fighter would be instantaneous 7.5G in the case of the F/A-18. The aircraft has been designed more for that. For example, the F/A-18 turn rate is roughly 22 degrees per second instantaneous and on the order of 6.0G and 14 degrees per second on a sustained basis.

That would help it evade surface-to-air missiles, for example, or AAA fire.

In that sense, those things I talked about, the A-6 would be somewhat less survivable than the F/A-18.

Senator KENNEDY. That is very helpful. I appreciate your response.

Thank you.

Senator GOLDWATER. I have been approached, as I imagine you have, relative to an aggressor aircraft made in Red China, the Mig-19, Mig-21 and Mig-23 to be bought by the United States for aggressor use.

Are you aware of that?

Admiral SCHOULTZ. Yes, sir, I am. I have seen the pitch that they give on that airplane. I am not sure of all the details that are involved. I don't know whether they made this offer against solicitation for aggressor aircraft that we asked for, but there are some problems I have with that.

I don't know what is required to make it flyable for our people. I don't know the growth capability of that airplane, what we could put in it, whether it would be too expensive to maintain.

I am a little bit concerned about the parts support. They claim they can manufacture all the parts. They claim they have enough technicians that could maintain it.

I am not positive whether they made the offer against solicitation for aggressor aircraft. I have read in the newspaper that they have.

Senator GOLDWATER. I am not too enthusiastic. I can't think of anything less acceptable politically than to buy a Russian airplane made in Red China.

So, we will just forget about that rascal.

Admiral, we have read recently several times criticism that we are modernizing our inventory of platforms, aircraft, and ships, but we are neglecting the modernization and expansion of our weapons inventory.

Now, are we in fact procuring platforms at the expense of weapons?

Admiral SCHOULTZ. No, sir, we are not. We are buying weapons about as fast as we can actually procure them. We have an awful lot of money in there.

As you know, the same thing happens in OSD and in the Navy. If you get a tremendous ramp up, and your money goes from a low level to a very high level, somebody will take half of that, saying you can't effectively use all that money in 1 year.

So, we have a reasonable ramp up. I think we are going to fill all of our ships with the load of ammunition, [deleted]. In fact, we just talked about it within the Navy, we are buying ordnance as fast as we feel we can really accept it.

We will have a full ship fill, meaning all our ships will have 100 percent of their onboard capability and there will be one ammunition ship load, whether it is 90 days or 60 days or 120 days back in the magazines, I can't address.

Senator GOLDWATER. You don't have to supply an answer to this now, but I am going to ask you to answer some questions.

Admiral SCHOULTZ. I will take that for the record.

Senator GOLDWATER. You said in your statement you could deploy 8 of 13 carriers fully equipped and capable of sustained operations.

I will ask you to supply for the record any shortfall that exists that would prevent you from deploying more than eight carriers.

Admiral SCHOULTZ. Yes, sir. Again, that is fully equipped with 100 percent stock and ammunition.

A lot of the shortage is in weapon handling equipment and some ground support equipment, but I will get that for the record for you, sir.

[The information follows:]

CARRIER EQUIPMENT SHORTFALL

Factors limiting our fully outfitted carriers fall into three major areas—weapons, aviation support equipment and aviation spares. From the weapons standpoint, the Navy currently has the capability to deploy eight carriers with a standard loadout. Through your support, this capability has improved over the past few years and will continue to improve [deleted] when we will have the inventory available to load out all of our deployable carriers. In Aviation Support Equipment, limiters are in two main areas. The primary limiting factor is Armament Weapons Support Equipment (AWSE) which is equipment to handle, transport, load or down-load airborne weapons. We now have sufficient AWSE to fully outfit eight carriers. Automatic Test Equipment (ATE) to support aircraft avionics systems is the other support equipment limiter. We have the ATE required to fully outfit twelve carriers. Current plans eliminate support equipment shortfalls [deleted]. The aviation spares shortfall is in expensive repairables, known as depot level repairables. These are returned to Naval Air Rework Facilities for repair. Sufficient spares are required to stock the carriers and fill the repair pipeline. There will be sufficient spares to deploy all carriers [deleted] if spares purchases occur as planned.

The Navy is examining all factors to determine if accelerating the ability to deploy all carriers fully equipped [deleted] is possible.

Senator **GOLDWATER**. Senator Wilson, do you have any other questions?

Senator **WILSON**. No.

Senator **GOLDWATER**. Senator Kennedy?

Senator **KENNEDY**. No.

Senator **GOLDWATER**. I want to thank you on behalf of the subcommittee and full committee for being here. You have answered a lot of questions. We have a few questions we will submit to you and ask that you reply with written answers for the record.

We might even have to ask you to come back because, as I said, we have not heard from the Budget Committee yet. That is getting to be a committee that is all important around here. I wish we could do away with it, but we can't.

Members of the subcommittee, I would like at this time to insert into our hearing record the statement of Capt. John C. Rice, Jr., the National President of the Naval Reserve Association regarding the fiscal year 1985 Defense Authorization Bill.

[The statement follows:]

Prepared Statement by Capt. John C. Rice, Jr., U.S. Naval Reserve, National President of the Naval Reserve Association

Mr. Chairman, Committee members, we appreciate your allowing the Naval Reserve Association to provide testimony to the Committee for your consideration. The Congress has the attention of the Services, particularly in the Navy where the joint effort by Congress and Secretary Lehman have created a new interest in the Naval Reserve. We now ask you to follow through on the movement to furnish the Guard and Reserve with the equipment to give them a current warfighting capability. We are concerned that if the Guard and Reserve units, which assume the additional responsibilities as a result of the expanded or new roles assigned to them, are not supplied with the combat capable equipment to go with the responsibilities, that the effort to make the Reserve Components more responsive to national security requirements will become "dead in the water". A case in point is the issue concerning the proposed (by NRA) consolidation of the Combat Search and Rescue (CSAR) and the Light Attack Helicopter (HAL) missions is presented later in this testimony.

Congressional leaders have demonstrated their intention to hold the Services' feet to the fire in addressing the active/reserve mix in the so called "Total Force". Secretary Lehman and Admiral Watkins have given strong backing to the Naval Reserve. However, the Bureaucracy has a long tail and the fulfillment of any idea is sometimes a long while arriving. An example can be found in last years' budget. Of the approximately one Billion dollars added to the President's request for Guard and Reserve Equipment, less than $30.0 Million was added to the Naval Reserve. It is quite obvious then that the Naval Reserve is overdue for some infusion of funds, particularly for equipment procurement, from the Congress. Although the Navy certainly appears to be at work on the effort to modernize the Naval Reserve in the out years, the Naval Reserve Association believes the time for positive action is now.

Secretary John Lehman in his FY 1985 Posture Statement remarked that, "...The reorganization of the Naval Reserve to a "horizontal integration" has had the effect of shifting a substantial portion of our force structure manning to the ready reserve..." The Secretary went on to cite in various portions of his statement what is being done now and what is planned in the future for the Naval Reserve: Thirty five ships of the 600 ship Navy; a Reserve Air Wing for the 15th Carrier and the other to the Carrier undergoing Service Life Extension; modern A-7E, E-2C, F-14A and SH-2F aircraft into reserve units this year; increase of

TWO FF/FFGS TO THE NAVAL RESERVE MAKING A TOTAL OF 26 OF THE TWO CLASSES. HE WENT ON TO STATE THAT, "...THE RESERVES MUST PROVIDE IMMEDIATE AUGMENTATION TO THE ACTIVE FORCE IN TIME OF EMERGENCY ACROSS THE ENTIRE SPECTRUM OF WARFARE...THERE SHOULD BE A PARALLEL SPECTRUM OF NEW AND OLD EQUIPMENT IN THE RESERVES IN THE SAME PROPORTION AS IN THE ACTIVE FORCE..."

BOTH THE SECNAV AND THE CNO PRAISED THE NAVAL RESERVISTS WHO VOLUNTEERED TO RELIEVE THE SAILORS SERVING ABOARD USS NEW JERSEY OFF LEBANON SO THE ACTIVE DUTY CREW MEMBERS COULD TAKE CHRISTMAS LEAVE. MORE THAN 650 RESERVISTS VOLUNTEERED, 135 OF WHICH WERE RECALLED. ADMIRAL WATKINS STATED, "...THE PATRIOTISM AND DEDICATION EXHIBITED BY THE CREW OF NEW JERSEY AND THOSE RESERVISTS WHO VOLUNTEERED...IS HEARTWARMING. WE SHOULD NEVER FORGET THAT THEY ARE SERVING THEIR COUNTRY WITH THE MOST PRECIOUS ASSETS THEY POSSESS -- THEIR TIME AND THEIR LIVES..."

ADMIRAL WATKINS MADE A POINT IN HIS TESTIMONY THAT, "...RESERVE FORCES MUST BE AVAILABLE AT THE PROPER TIME...(POSSIBLY) PRIOR TO MOBILIZATION DURING A PERIOD OF PREHOSTILITY..." HE GAVE AS AN EXAMPLE, THE NAVAL RESERVE CARGO HANDLING AND CONSTRUCTION FORCES BUT HE COULD HAVE CITED MANY OTHER TYPE UNITS SUCH AS THE VP SQUADRONS, THE CARRIER AIR WINGS, THE MINE SWEEPERS, NAVAL INTELLIGENCE, CINC AND CNO COMMAND CENTERS, ETC. THE CNO MADE A VERY IMPORTANT POINT WHEN HE WROTE, "...IF THESE OR ANY SIMILAR FORCES ASSIGNED TO THE NAVAL RESERVE WERE NOT AVAILABLE WHEN REQUIRED PRIOR TO HOSTILITIES, IT COULD SERIOUSLY IMPACT OUR OVERALL CAPABILITY..."

NRA HAS RECOMMENDED FOR YEARS THAT THE PRESIDENT'S AUTHORITY TO RECALL 100,000 RESERVISTS FOR UP TO 90 DAYS BE CHANGED TO ALLOW FOR A LONGER PERIOD OF RECALL, PREFERABLY 270 DAYS BUT AT LEAST FOR 180 DAYS. IF THE SERVICES CANNOT COUNT ON USING THE GUARD AND RESERVE IN LESS THAN AN ALL OUT MOBILIZATION EFFORT, THEY OBVIOUSLY CANNOT CONSIDER USING THE RESERVE COMPONENT PERSONNEL IN MANY OF THE MISSION AREAS.

NRA CONTINUES TO BELIEVE THAT THE GUARD AND RESERVE, PROPERLY SUPPORTED, IS THE BEST BUY IN DEFENSE TODAY. ANY MISSION OR TASK THAT CANNOT BE ACCOMPLISHED BY THE GUARD AND RESERVE SHOULD THEN BE ASSIGNED TO THE ACTIVE FORCE. LIKE ZERO-BASED BUDGETING, MISSION PLANNING SHOULD START WITH THE BASICS WHEN

CONSIDERING WHETHER RESERVES OR ACTIVE FORCES SHOULD BE ASSIGNED. SECRETARY LEHMAN MAKES A POINT THAT, "...THE HEAVY SCHEDULE OF PEACETIME FORWARD DEPLOYMENTS...MUST BE UNDERSTOOD WHEN CONSIDERING RESERVE/ACTIVE FORCE RATIOS..." NRA UNDERSTANDS AND APPRECIATES THIS VERY VITAL CONSIDERATION, BUT IT SHOULD ALSO BE UNDERSTOOD THAT THERE ARE MANY MISSIONS WHICH ARE NOT AFFECTED BY THIS PREMISE AND THAT OTHER DEPLOYMENT PRACTICES SHOULD BE CONSIDERED BOTH AT NAVY DEPARTMENT AND NATIONAL SECURITY COUNCIL LEVELS WHICH COULD ALLEVIATE SOME OF THE DEPLOYMENT PROBLEMS.

THE NAVAL RESERVE ASSOCIATION WILL OFFER SEVERAL RECOMMENDATIONS FOR IMPROVING THE WARFIGHTING CAPABILITY OF THE NAVAL RESERVE SO IT CAN PERFORM ITS ASSIGNED MISSION. ONE OF THESE ISSUES, THE ASSUMPTION BY THE RESERVE TACTICAL AIRWINGS AS THE 14TH AND 15TH NAVY AIRWINGS SHOULD PROVIDE CONSIDERABLE SAVINGS, AS AN OFFSET AGAINST THE ADDITIONAL COST ITEMS RECOMMENDED, WITHOUT REDUCING WARFIGHTING CAPABILITY. WE HOPE THE COMMITTEE AND THE CONGRESS WILL GIVE SERIOUS CONSIDERATION TO OUR PROPOSALS.

THE TESTIMONY WILL COVER THE FOLLOWING ISSUES:

- THE RESERVE TACTICAL AIR WINGS
- COMBAT SEA AIR RESCUE (CSAR) AND HELICOPTER LIGHT ATTACK (HAL) MISSION CONSOLIDATION.
- ACTIVE/RESERVE MIX

THE RESERVE TACTICAL AIR WINGS

THE MODERNIZATION OF THE RESERVE TACTICAL AIR WINGS IS NOW WELL UNDERWAY. SECRETARY LEHMAN'S POSTURE STATEMENT FOR FY 1983 SET THE TONE TWO YEARS AGO WHEN HE STATED, "...WE WILL BEGIN A SHIFT THIS YEAR FROM A VERTICAL INTEGRATION OF OUR AIRCRAFT - THE PRACTICE OF PUTTING OLDER AIRCRAFT MODELS INTO THE RESERVES AS WE PHASE NEWER ONES INTO THE FLEET-TOWARD HORIZONTAL INTEGRATION...WE SHALL ESTABLISH RESERVE SQUADRONS FOR VIRTUALLY ALL OF OUR FRONT LINE FLEET

AIRCRAFT..." THIS YEAR THE SECRETARY ANNOUNCED THAT, "...RESERVE UNITS HAVE BEEN ESTABLISHED AND ARE FLYING P-3Cs, S-3s, SH-2s, A6Es, A-7Es AND FA-18s. SOME OF THESE FLYING UNITS ARE AUGMENTATION UNITS TO FILL OUT FLEET SQUADRON STRENGTH UPON MOBILIZATION, AND OTHERS ARE COMMISSIONED SQUADRONS..." IN COMMENTING ON THE AIRCRAFT PROGRAMS HE SAID, "...THE 13TH ACTIVE AIRWING IS BEING COMMISSIONED THIS YEAR AND A 14TH IS PLANNED FOR FY 87. THE AIRWING DEDICATED TO OUR 15TH DEPLOYABLE CARRIER WILL BE ONE OF THE TWO RESERVE AIRWINGS. THE SECOND AIRWING WILL BE DEDICATED TO THE AIRCRAFT CARRIER UNDERGOING SERVICE LIFE EXTENSION..."

THE NAVAL RESERVE ASSOCIATION HAS RECOMMENDED FOR SEVERAL YEARS THAT THE RESERVE AIRWINGS BE TIED TO CARRIER DECKS. THE ORIGINAL RECOMMENDATION WAS FOR THE TWO RESERVE WINGS TO BE ASSIGNED TO THE 13TH AND 14TH CARRIERS, THE ONE IN OVERHAUL AND THE ONE IN THE SERVICE LIFE EXTENSION PROGRAM (SLEP). LAST YEAR NRA RECOMMENDED THAT THE 14TH AND 15TH AIR WINGS BE ASSIGNED TO THE RESERVE AIRWINGS. THAT RECOMMENDATION IS ONCE AGAIN OFFERED FOR CONSIDERATION.

A REVIEW OF THE PAST HISTORY FOLLOWED BY A CURRENT STATUS SITREP ON THE CONDITION OF THE RESERVE AIRWINGS IS PRESENTED TO PROVIDE THE READER WITH SOME BACKGROUND ON THE HISTORY OF THE NAVAL AIR RESERVE TACAIR COMMUNITY.

SINCE THE END OF WORLD WAR II THE FLOW OF AIRCRAFT HAS BEEN ALMOST EXCLUSIVELY FROM OLDER USN ASSETS WHICH WERE OF NO FURTHER USE TO THE ACTIVE FORCE. THEY CONSISTED OF AIRCRAFT IN EXCESS OF THE NEEDS OF ACTIVE FORCE REQUIREMENTS EITHER FOR THE PRESENT OR FUTURE TIME FRAME. AS THE ACTIVES RECEIVED NEW AIRCRAFT THE OLDER MODELS MIGRATED TO THE NAVAL AIR RESERVE, OFTEN AS AN AFTERTHOUGHT, IN LIEU OF PUTTING THE AIRCRAFT INTO MOTHBALLS OR SALVAGE.

AS THE DEFENSE BUDGET DROPPED OFF IN PRIORITY, THE AIRCRAFT INVENTORY BECAME CRITICAL FOR THE ACTIVE FORCE WITH AN EVEN GREATER IMPACT ON THE RESERVE SQUADRONS. EVENTUALLY THE DESIRED "MIRROR IMAGE" OF THE RESERVE UNITS CHANGED TO ONE OF HARDLY ANY COMPATIBILITY WITH THE ACTIVE SQUADRONS. ON SEVERAL OCCASIONS, THE SITUATION BECAME SO CRITICAL IN THE ACTIVE FORCE THAT THE OLD RESERVE AIRCRAFT HAD TO BE TRANSFERRED BACK INTO THE ACTIVES TO FILL THE VOIDS CAUSED BY COMBAT AND OTHER ATTRITION LOSSES WELL IN EXCESS OF NAVAL AIRCRAFT PROCUREMENT GAINS.

Back in the early 70's (1973-1974) the Total Force Study recommended, inter alia, that a Reserve Air Wing be maintained at a currency whereby it could be deployed expeditiously aboard a designated Carrier in the event of a national emergency. For some reason a few of the OSD officials could not believe that a Reserve Air Wing could be ready to go to sea aboard a Carrier without many months of workup. An Operational Readiness Exercise (ORE) of Air Wing Thirty was finally conducted aboard USS RANGER in November 1976 and resulted in a highly professional performance by the Reserve Air Wing. Not only could the Reserve unit meet the challenge, but it could do it faster and with a much higher professional capability than the active Air Wings which were not at sea or in a ready-for-deployment status. Air Wing Twenty followed in November 1978 aboard Independence with another outstanding performance. The two exercises prove that the concept of Reserve Air Wings assigned to active force Carriers for early deployment is a viable one. The experience level of the Reserve flight and maintenance crews is the key to a high combat readiness status.

The problem that has developed is the incompatibility of the Carrier with the Reserve Air Wing. The aircraft mix in the current Reserve TACAIR community cannot be supported by any Carrier in the present configuration. Although the Air Wing could be ready for Carrier based combat operations within a few weeks after receiving order to do so, (within hours for land-based operations) it could not be supported for sustained operations of more than a few weeks by the Carrier. Even for that short period of time the Air Wings portable or jury-rigged equipment would have to be used. It is estimated that it would take up to six months to make necessary modifications to the ship in order to provide maintenance and supply support for the Reserve Air Wing. Pack-up or War-Risk Kits were included in the early budget iteration a few years ago, but fell out in the later going.

The NRA proposal to designate the Reserve Air Wings as the 14th and 15th Air Wings is based upon the following rationale:

- The Reserve TACAIR units have proved time and time again that they are capable of conducting cyclic operations off a Carrier at sea within a very reasonable time frame. This period of workup varies somewhat with

THE LENGTH OF TIME SINCE THE LAST REFRESHER QUALS WERE CONDUCTED ABOARD SHIPS.

- THE PILOTS AND MAINTENANCE PERSONNEL ARE HIGHLY PROFESSIONAL, SEASONED VETERANS AND SECOND OR THIRD TOUR PILOTS. THEY CAN EQUAL OR OUTPERFORM ANY ACTIVE UNIT AND THEY SHOULD WITH THEIR BAG OF SEASONED AVIATORS.

- THE MAIN DRAWBACK, THE INCOMPATIBILITY OF THE AIRCRAFT WITH THE SUPPORT ABOARD THE CARRIERS, IS DIMINISHED SIGNIFICANTLY WITH THE INPUT OF NEW AIRCRAFT INTO THE RESERVE UNITS.

- THE ONLY MODERN AIRCRAFT NOT EXPECTED TO BE IN THE RESERVE AIRWINGS WITHIN THE NEXT TWO YEARS ARE THE E-2C HAWKEYE (ONE AIR WING IS EQUIPPED WITH THE E-2C THE OTHER WITH THE E-2B), THE A-6E, THE EA6B (THEY CURRENTLY FLY THE EA6A) AND THE S-3. IF NRA'S RECOMMENDATION IS IMPLEMENTED, THE ASSETS NOT NOW AVAILABLE IN THE RESERVE AIR WINGS CAN BE MOVED INTO THE RESERVE SQUADRONS RATHER THAN ASSIGNING THE ASSETS TO A YET TO BE ESTABLISHED ACTIVE AIRWING.

- SINCE MANY OF THE CURRENT AIRCRAFT MODELS WILL ALREADY BE IN PLACE, THERE IS A CONSIDERABLE COST AVOIDANCE REALIZED BY THE NRA PLAN.

- THE SAFETY RECORD OF THE NAVAL AIR RESERVE ALSO HAS THE POTENTIAL FOR COST SAVINGS. FOR YEARS, THE NAVAL AIR RESERVE SAFETY RECORD HAS BEEN NUMBER 1 OR 2 AMONG THE MAJOR AVIATION COMMANDS. IN 1982 FOR EXAMPLE THE NAVAL AIR RESERVE ACCIDENT RATE WAS .62/100,000 FLIGHT HOURS COMPARED TO THE ALL USN RATE OF 4.46. LAST YEAR, 1983, THE RESERVE RATE WAS 1.15 COMPARED TO THE ALL-NAVY FIGURE OF 4.36. IN BOTH YEARS THE NAVAL RESERVE RECORD WAS THE BEST IN THE NAVY.

- WHEN IT IS DECIDED THAT THE SIXTEENTH (16TH) AIR WING IS REQUIRED, THE DECISION CAN BE MADE AS TO WHETHER TO FORM AN ACTIVE OR RESERVE AIRWING.

NRA SEES NO REASON TO WAIT FOR ANOTHER ACTIVE WING TO BE FORMED. THERE WILL ALWAYS BE ONE CARRIER IN OVERHAUL (CONSIDERED DEPLOYABLE) AND ONE IN SLEP (NON-DEPLOYABLE). THE RESERVE AIR WINGS CAN BE READY TO MAN BOTH CARRIERS BY THE

TIME THEY CAN BE PUT ON THE LINE. THE FACT IS, THAT THE RESERVE AIRWINGS COULD PROBABLY BE READY BEFORE AN ACTIVE UNIT WHICH HAS "STOOD DOWN" AFTER A DEPLOYMENT CYCLE.

ASSUMING THAT ALL CARRIERS ARE DEPLOYED WITH ASSIGNED AIRWINGS IN AN EMERGENCY AND THE RESERVE AIRWINGS HAVE TO WAIT UNTIL THE CARRIERS IN OVERHAUL AND SLEP COMPLETE THE YARD WORK, THE AIRWINGS WITH THEIR MODERN AIRCRAFT WOULD BE AVAILABLE FOR OTHER MISSIONS AS NEEDED. THE F-14S, FOR INSTANCE, COULD BE USED IN AN AIR DEFENSE ROLE FOR WHICH THEY ARE WELL SUITED, AS COULD THE F/A-18S.

THE INCREASE IN THE NUMBER OF DEPLOYABLE CARRIERS AND THE RESULTANT REQUIREMENT FOR ASSIGNED AIRWINGS WILL REQUIRE THE REOPENING OF THE S-3, VIKING LINE TO EQUIP THE TWO VS SQUADRONS NECESSARY TO ROUNDOUT THE AIRWINGS. THE RESERVE AIRWINGS DO NOT HAVE VS UNITS ATTACHED SO THEY WOULD HAVE TO BE FORMED WHETHER IT IS AN ACTIVE OR RESERVE AIRWING SELECTED.

RECOMMENDATION:

THE NAVAL RESERVE ASSOCIATION STRONGLY RECOMMENDS THAT THE TWO RESERVE AIRWINGS BE DESIGNATED AS THE AIRWINGS DEDICATED TO THE 14TH AND 15TH CARRIERS AND THAT THEY BE COMPLETELY OUTFITTED WITH CURRENT, COMBAT CAPABLE AIRCRAFT COMPATIBLE WITH THEIR ASSIGNED CARRIERS.

FURTHER, THAT WHEN THE 16TH AIR WING IS PLANNED, CONSIDERATION BE GIVEN TO MAKING THAT A RESERVE AIRWING ALSO.

COMBAT SEA AIR RESCUE (CSAR) HELICOPTER LIGHT ATTACK (HAL) MISSION CONSOLIDATION

TWO UNIQUE NAVAL RESERVE ROLES INCLUDE THE NAVY COMBAT SEARCH AND RESCUE (CSAR) AND THE HELICOPTER LIGHT ATTACK (HAL) MISSIONS. THESE RESERVE-ONLY ROLES ARE EQUIPPED WITH HARDWARE WHICH IS ADEQUATE FOR A PEACETIME TRAINING PLATFORM BUT IT WOULD BE SUICIDAL TO ATTEMPT A WARTIME MISSION WITH THESE AIRCRAFT IN A HOSTILE ENVIRONMENT SITUATION.

THE NAVAL RESERVE ASSOCIATION THEREFORE PROPOSES THAT THE TWO MISSIONS BE CONSOLIDATED INTO ONE TYPE SQUADRON CONSISTING OF THREE UNITS WITH OFF THE SHELF

AIRCRAFT. THE TWO SEPARATE MISSIONS WILL BE DISCUSSED AT SOME LENGTH TOGETHER WITH A PROCUREMENT PLAN TO EQUIP THE NEW UNITS OVER A THREE YEAR PERIOD.

COMBAT SEARCH AND RESCUE (CSAR)

RESERVE HELICOPTER SQUADRON HC-9 IS THE ONLY NAVY UNIT, ACTIVE OR RESERVE, WITH THE SPECIFIC TASK OF COMBAT SEARCH AND RESCUE. THE LAST ACTIVE FORCE CSAR UNIT WAS DISESTABLISHED IN 1978. HC-9 HAS AN ALLOWANCE OF NINE (9) HH-3A HELICOPTERS WHICH WERE CONVERTED FROM SH-3A ASW HELOS DURING VIETNAM. THE AIRCRAFT, NOW OVER TWENTY YEARS OLD, HAVE BEEN EQUIPPED WITH LIGHT ARMOR AND WEAPONS AND A HIGH SPEED RESCUE HOIST. LIMITATIONS OF THE AIRCRAFT WILL BE COVERED LATER.

NAVAL INSTITUTE PROCEEDINGS OF FEBRUARY 1983 CARRIED A WELL RESEARCHED AND ABLY WRITTEN ARTICLE BY CDR DANIEL G. HARTLEY, USNR, ON THE HISTORY, INTRICACIES AND FALLACIES OF COMBAT SEARCH AND RESCUE. CDR HARTLEY INTRODUCES HIS SUBJECT WITH THE STATEMENT THAT, "...EVERY "DOWNED" PILOT HOPES HEAVEN AND EARTH WILL BE MOVED IN ORDER TO EFFECT HIS RESCUE...RESCUE CONCEPTS USED BY THE NAVY IN VIETNAM WERE WOEFULLY INADEQUATE - NOT AS A RESULT OF INABILITY BUT BECAUSE OF A STUDIED RESULT BY THE NAVY. THIS IS A HISTORICAL REALITY, AND IT IS INEXUSABLE..." HE GIVES THREE FUNDAMENTAL REASONS FOR A RELIABLE COMBAT RESCUE; (1) AN AIRMAN WILL EXTEND HIMSELF AND HIS MACHINE TO THE UTMOST IF HE STANDS A GOOD CHANCE OF BEING RESCUED (2) AN IMPORTANT INTELLIGENCE SOURCE IS DENIED THE ENEMY, AND (3) IT GIVES THE WELL QUALIFIED INDIVIDUAL A CHANCE TO RETURN TO COMBAT.

TWO VERY IMPORTANT ASPECTS MAKE UP A COMPETENT PROFESSIONAL CSAR EFFORT ONCE THERE IS A DECISION TO GO. THE FIRST IS THE TRAINING OF THE CREW AND SECOND IS THE CAPABILITY OF THE HELICOPTER PLATFORM. ALTHOUGH THE CREWS ARE ALL RESERVISTS, THEY ARE EXTREMELY WELL QUALIFIED IN THE TACTICS NECESSARY TO COMPLETE THE MISSION SUCCESSFULLY, IF HUMANLY POSSIBLE. THE CAPABILITY OF THE AIRFRAME ASSIGNED IS YET ANOTHER STORY.

SEVEN OF THE HC-9 PILOTS HAVE COMPLETED THE MARINE CORPS AIR WEAPONS AND TACTICS SCHOOL (MAWTS) WHICH INCLUDED FOUR WEEKS OF ACADEMIC STUDY FOLLOWED BY THREE WEEKS OF INTENSIVE PRACTICAL APPLICATION ON MAP INTERPRETATION AND TERRAIN ANALYSIS, TERRAIN FLIGHT TECHNIQUES, THREAT ANALYSIS, THREAT COUNTERMEASURES, NIGHT TACTICS AND MISSION PLANNING. THIS ENABLES HC-9 TO ACCOMPLISH THE MOST DIFFICULT OF ALL RESCUE SCENARIOS, THE NIGHT COVERT OPERATION. THE IMPORTANCE OF HAVING A FULLY QUALIFIED CREW FOR THE CSAR MISSION WAS STATED BY THE HOLLOWAY REPORT ON THE RAID IN IRAN. THE COMMITTEE STATED THAT, "...IT WAS EASIER TO TRAIN A PILOT TO FLY A DIFFERENT AIRCRAFT THAN TO FLY A NEW MISSION..."

THE DEFICIENCIES OF THE HH-3A ARE MANY AND SERIOUS. THEY INCLUDE: HIGH GROUND FIRE VULNERABILITY; INADEQUATE SPEED, MANEUVERABILITY, RANGE AND SELF PROTECTIVE FIREPOWER; LARGE TARGET/RADAR/INFRARED SIGNATURE PROFILES; NO SURVIVOR DETECTION CAPABILITY; LIMITED PASSIVE LOW ALTITUDE NAVIGATION CAPABILITY; LIMITED NIGHT CLOSE-TO-EARTH CAPABILITY; AND, OVER MAX GROSS WEIGHT WITH A COMBAT LOAD AND FULL INTERNAL FUEL.

THE OBVIOUS CONCLUSION BY THE NAVAL RESERVE ASSOCIATION IS THAT WHILE THE MISSION IS AN EXTREMELY IMPORTANT ONE, PARTICULARLY TO THE AIRCREW WHO ARE PLACED IN A LIVE COMBAT ROLE, THE NAVY HAS PROCRASTINATED IN PROVIDING AN ANGEL FOR CREWMEN WHO ARE SHOT DOWN OVER ENEMY TERRITORY. THE CSAR IS A VITAL PART OF THE NAVY TACAIR TEAM AND IT IS OBVIOUS FROM THE LAST TWO HAPPENINGS IN GRENADA AND LEBANON THAT NAVAL AVIATION CAN BE CALLED UPON IN A MOMENTS NOTICE TO ENGAGE IN A HOSTILE ACTION. NRA BELIEVES THAT THE NAVY AND CONGRESS SHOULD MAKE EVERY EFFORT TO SUPPORT THE AVIATORS WHO ENTER A HOSTILE ENVIRONMENT WITH A FIRST RATE CSAR. THE HOUSE ARMED SERVICES COMMITTEE WAS VERY CRITICAL, NOT ONLY OF THE NAVY'S BUT OF THE SERVICES' EFFORTS IN THE CSAR EFFORT. THE COMMITTEE POINTED OUT THAT IN VIETNAM ONE NAVY CSAR CREWMAN WAS KILLED FOR EVERY 1.8 RESCUES AND A NAVY CSAR HELICOPTER WAS LOST FOR EVERY 1.4 RESCUES. CONSIDERATION OF OBTAINING A CSAR HELICOPTER IS ANTICIPATED IN THIS YEAR'S PROGRAM OBJECTIVE MEMORANDUM (POM) PROCESS. HOWEVER, THE FIX COULD BE YEARS OFF, PARTICULARLY IF NAVY DECIDES TO WAIT FOR THE JVX. NRA BELIEVES A QUICK SOLUTION TO THE PROBLEM IS AVAILABLE.

NRA THEREFORE PROPOSES AN OFF-THE-SHELF PROCUREMENT OF HELICOPTERS TO ACCOMPLISH THIS AND THE FOLLOWING MISSION.

LIGHT ATTACK HELICOPTER (HAL) SQUADRON

THE MISSION OF THE HAL SQUADRONS IS TO PROVIDE, IN NIGHT AND ALL-WEATHER SITUATIONS, CLOSE AIR SUPPORT FOR SPECIAL WARFARE GROUPS; CONVENTIONAL AIR

STRIKES; DEFENSIVE SUPPRESSION; DEMOLITION ATTACKS; CLANDESTINE INSERTIONS/ EXTRACTORS OF PERSONNEL BEHIND ENEMNY LINES; OVERLAND COMBAT RESCUE, COUNTER-SURGENCY OPERATIONS, INTELLIGENCE OPERATIONS OR THE NORMAL HELICOPTER TASKS. SQUADRONS, HAL-4 AND HAL-5, ARE NAVAL RESERVE UNITS AND ARE THE ONLY ASSETS IN THE NAVY TRAINED AND DESIGNATED TO SUPPORT THE SPECIAL WARFARE FORCES, PARTICULARLY THE SEAL UNITS.

THE CREWS REQUIRE INTENSIVE TRAINING NOT ONLY TO OBTAIN THEIR TOTAL QUALIFICATIONS BUT TO MAINTAIN THEIR SKILLS.

THIS TRAINING INCLUDES THE USE OF NIGHT VISION GOGGLES, EVASIVE MANEUVERING, NAP OF THE EARTH NAVIGATION, TERRAIN ANALYSIS AND AIR TO GROUND WEAPONS DELIVERY TACTICS.

AS WITH THE HC SQUADRONS, ATTENDANCE AT THE MARINE CORPS AIR WEAPONS AND TACTICS SCHOOL (MAWTS) PROVIDES THE BACKGROUND FOR QUALIFYING THE CREWS. PRESENTLY THERE ARE THREE QUALIFIED INSTRUCTOR GRADUATES OF THE MAWTS IN HAL-4 AND THREE IN HAL-5. EACH SQUADRON UTILIZES AT LEAST ONE QUOTA PER YEAR AT THE SCHOOL. REGULAR EXERCISES ARE CONDUCTED WITH THE SEAL UNITS AS WELL AS WITH CERTAIN ARMY GROUPS. THE KEY FACT IS THAT THE NAVY SPECIAL WARFARE FORCES EXPECT THE HAL UNITS TO PROVIDE SUPPORT FOR THEM WHEN CALLED UPON TO DO SO. THE HAL UNITS ARE UNIQUELY QUALIFIED FOR THEIR MISSION WITH ONE EXCEPTION - THEIR HARDWARE.

THE GENESIS OF THE HAL SQUADRONS WAS HELICOPTER COMBAT SUPPORT SQUADRON ONE IN THE EARLY STAGES OF VIETNAM WHICH PROVIDED HELICOPTER GUNSHIPS TO SUPPORT THE "BROWN WATER NAVY". THE EFFECTIVENESS OF THE HELO GUNSHIPS CAUSED HELICOPTER LIGHT ATTACK SQUADRON, THREE TO BE ESTABLISHED. THIS SQUADRON SUPPLIED DETACHMENTS TO SPECIAL WARFARE UNITS IN THE MEKONG DELTA REGION FOR FIVE YEARS BEFORE BEING DISESTABLISHED IN 1972.

THE RAPID ADVANCEMENT AND WORLDWIDE DISTRIBUTION OF WEAPONS TECHNOLOGY SINCE THE VIETNAM CONFLICT HAS NECESSITATED CONSIDERABLE CHANGES IN TRAINING TO MEET THE CHALLENGES OF NEW HIGH-THREAT COMBAT ENVIRONMENTS. THE POTENTIAL PRESENCE OF HAND-HELD OR HIGHLY MOBILE WEAPONS DICTATES THAT AIRCRAFT FLIGHT IN A TACTICAL ENVIRONMENT BE CONDUCTED UTILIZING TERRAIN-MASKING TECHNIQUES TO AVOID DETECTION.

THE HAC UNITS CONDUCT CONSIDERABLE TIME TRAINING IN THE TECHNIQUES REQUIRED TO OPERATE IN THE EXPECTED THREAT ENVIRONMENT BUT, ONCE AGAIN, THE GOVERNING FACTOR IS THE LACK OF CAPABILITY OF THE HH-1K AIRCRAFT IN THE EXPECTED OPERATIONAL ENVIRONMENT.

THE AIRCRAFT USED BY HAL-4 AND HAL-5 ARE HH-1K GUNSHIPS ARMED WITH THE M-21 WEAPONS SUBSYSTEM CONSISTING OF TWO GATLING-TYPE MINE-GUNS AND TWO ROCKET LAUNCHERS PLUS TWO DOOR-MOUNTED M-60 MACHINE GUNS. OBVIOUSLY THE AIRCRAFT IS WELL ARMED HOWEVER WITH THE PRESENT THREAT ENVIRONMENT THE AIRCRAFT ITSELF IS INADEQUATE FOR THE TASK ASSIGNED. THE AIRCRAFT ARE CIRCA EARLY 1960S AND DO NOT HAVE THE SPEED OR POWER AVAILABLE TO OPERATE IN THE THREAT ENVIRONMENT IN WHICH THEY CAN BE EXPECTED TO HAVE TO PERFORM. THE WEAPONS SUITE CAN, FOR THE MOST PART, BE SWITCHED TO A SUITABLE AIRCRAFT REPLACEMENT.

NRA PROPOSES TO COMBINE THE HAL SQUADRONS WITH HC-9, THE COMBAT SEARCH AND RESCUE UNIT, THE SQUADRON DISCUSSED EARLIER. THE MISSIONS CAN BE CONSOLIDATED IF A SUITABLE AIRFRAME CAN BE FOUND FOR A REASONABLE PRICE.

SUMMARY

THE TWO NAVAL RESERVE ONLY MISSIONS OF NAVY COMBAT SEARCH & RESCUE (CSAR) AND HELICOPTER LIGHT ATTACK (HAL) ARE EQUIPPED WITH OBSOLETE AND INADEQUATE AIRCRAFT WITH WHICH TO CONDUCT THEIR ASSIGNED TASKS. IT WOULD IN FACT BE SUICIDAL TO ATTEMPT EITHER MISSION IN THE ANTICIPATED THREAT ENVIRONMENT WHICH THEY COULD EXPECT TO ENCOUNTER.

BOTH MISSIONS ARE CRITICAL TO THE NAVY IN THE EVENT OF HOSTILITIES OR COVERT OPERATIONS. COMBAT PILOTS NEED THE ASSURANCE THAT ALL POSSIBLE ACTIONS WILL BE EXPLOITED TO TRY TO RESCUE THEM SHOULD THEY BE SHOT DOWN OVER ENEMY CONTROLLED TERRITORY. THE SPECIAL FORCE UNITS, PARTICULARLY THE SEALS ARE DEPENDING ON THE HAL UNITS FOR SUPPORT.

THE NAVAL RESERVE ASSOCIATION HAS ACCOMPLISHED CONSIDERABLE RESEARCH AS TO THE BEST MEANS TO SOLVE THE DILEMMA OF THE INADEQUATE HARDWARE ON A SHORT TERM AND EFFECTIVE BASIS. NRA BELIEVES THAT BY CONSOLIDATING THE THREE SQUADRONS (2 HAL, 1 HC) INTO ONE TYPE UNIT OF THREE EIGHT (8) PLANE SQUADRONS WITH OFF-THE-

SHELF HELICOPTERS, OVER A THREE YEAR PERIOD, THE SOLUTION IS IMMEDIATELY AVAILABLE TO CONGRESS AND THE NAVY.

THIS PROPOSAL, IF ACTIVATED, SHOULD IMPROVE TO A QUANTUM DEGREE THE MORALE OF THE CARRIER BASED NAVAL AVIATORS, THE SPECIAL FORCE UNITS BEING SUPPORTED AND THE RESERVISTS CHARGED WITH THE HAL AND CSAR MISSIONS.

THE PLAN

NRA RECOMMENDS THAT THE CONGRESS AUTHORIZE AND FUND THE PROCUREMENT OF EIGHT OFF-THE-SHELF UH-60 BLACKHAWK HELICOPTERS EACH YEAR FOR THREE CONSECUTIVE YEARS - FISCAL YEARS 1985, 1986 AND 1987. NRA FURTHER RECOMMENDS THE INCLUSION OF THE EXTERNAL STORES SUPPORT SYSTEM (ESSS) KITS, THE INFRA-RED SUPPRESSOR AND THE RESCUE HOIST FOR EACH AIRCRAFT.

IMPLEMENTATION OF THIS NRA PROPOSAL WOULD ACCOMPLISH THE FOLLOWING OBJECTIVES: PROVIDE IMMEDIATE SOLUTION TO THE CRITICAL NEED FOR REPLACEMENT AIRCRAFT FOR THE HAL AND HC UNITS AT THE LOWEST POSSIBLE COST; SUPPORT THE CRITICAL MISSIONS OF THE NAVY'S SPECIAL WARFARE FORCES; PROVIDE A BIG MORALE BOOST TO CARRIER NAVAL AVIATORS CALLED UPON TO FLY COMBAT MISSIONS OVER ENEMY CONTROLLED TERRITORY; DEMONSTRATE CONGRESSIONAL RESOLVE TO SUPPORT A RESERVE COMPONENT WHEN IT ASSUMES MISSION RESPONSIBILITY; AND, TAKE ADVANTAGE OF THE STATE OF THE ART, OFF-THE-SHELF, COST EFFECTIVE SOLUTION TO A CRITICAL MISSION SHORTFALL.

THE AIR FORCE AND ARMY UNITS WHICH HAVE OPERATED THE UH-60 HAVE BEEN VERY HIGH IN THEIR PRAISE OF THE AIRCRAFT AND BELIEVE IT TO BE THE IMMEDIATE ANSWER FOR THE MISSION PROPOSED HEREIN. THE PROPOSAL AS PRESENTED INCLUDES NO "EXTRA GOLD PLATED ITEMS" NOT ESSENTIAL TO THE SUCCESSFUL MISSION COMPLETION. CHART (1) ILLUSTRATES VIVIDLY THE COMPARISON BETWEEN THE HH-3A, HH-1K AND UH-60 IN MISSION PERFORMANCE CHARACTERISTICS.

THE FOLLOWING TABLE GIVES THE COST BREAKDOWN OF THE RECOMMENDED PROCUREMENT. THIS SHOWS THE MAXIMUM AMOUNTS CONTEMPLATED FOR A COMPLETE MISSION EQUIPPED PACKAGE SUBJECT, OF CAUSE, TO NAVY MODIFICATION.

PROCUREMENT (8) UH-60 BLACKHAWK
(FY 1985 DOLLARS IN MILLIONS)

	UNIT COST	TOTAL	NOTES
FLYAWAY COST	$5.3	$42.4	INCL. IRS, ESSS, HOIST
SPARE PARTS	6%	$ 2.5	
PRODUCT SUPPORT		$ 2.1	
MULTI-MISSION KITS		$ 3.0	
TOTAL		$50.0	8 A/C SQUADRON

HELICOPTER COMPARISON CHART

		HH-3A	HH-1K	UH-60A*
1.	SPEED (SEA LEVEL)	120 KTS	100 KTS	167 KTS
2.	MANEUVERABILITY (G'S)	+1.5/-.5	+2.0/+.5	+3.5/-1
3.	RANGE (NO WIND)	450 NM	200 NM	1,300 NM
4.	DEPLOYABILITY	NO SELF DEPLOYMENT CAPABILITY	NO SELF DEPLOYMENT CAPABILITY	SELF DEPLOYABLE TO EUROPEAN OR ASIAN THEATERS
5.	AIR TRANSPORTABILITY (TRANSPORT TYPE/NUMBER TRANSPORTABLE)	C5/3	C5/6 C141/2 C130/1	C/5/6 C141/2 C130/1
6.	MAINTAINABILITY (MAINTENANCE MAN HOURS PER FLIGHT HOUR)	23	6.5	4
7.	COMBAT SURVIVABILITY	ARMOR PLATE RETROFIT PROVIDES MARGINAL DETERRENCE AGAINST SMALL ARMS (7.62MM)	NO ARMOR PLATE FLAK SEAT AVAIL.	INTEGRATED DESIGN CONCEPT WITH SIGNIFICANT SURVIVABILITY UP TO 23MM HEI
8.	CRASHWORTHINESS	NO DESIGN SPECS.	NO DESIGN SPECS.	IMPACTS UP TO 35 FPS (2100 FPM)
9.	WEAPONS CAPABILITY	M60 GAU 2A/B MINI GUN	7.62MM/2.75 ROCKETS	IN ADDITION TO POINT DEFENSE AS INDICATED FOR HH-3A A FULL COMPLEMENT OF AIR TO AIR AND AIR TO SURFACE WEAPONS ARE COMPATIBLE WITH THE ESSS
10.	IR SUPPRESSION	NONE	PARTIAL REDUCTION (PAINT)	FULL IR SIGNATURE REDUCTION

* UH-60A WITH EXTERNAL STORES SUPPORT SYSTEM (ESSS)

CHART (1)

ACTIVE/RESERVE MIX

THE NAVY HAS SUBMITTED "A REPORT TO THE CONGRESS ON THE NAVY'S TOTAL FORCE FEBRUARY 1984". HOWEVER, A QUICK REVIEW OF THE REPORT REVEALS THAT THERE ARE STILL SOME OLD HABITS TO BREAK. SOME OF THE RECOMMENDATIONS MADE WERE POSITIVE SUCH AS THE CARIBBEAN INITIATIVE BUT MOST OF THOSE OCCUR IN THE OUT YEARS SOMETIME AND WE ARE INHERENTLY SUSPICIOUS OF OUT YEAR PLANNING FOR THE NAVAL RESERVE.

MANY OF THE CURRENT PROPOSALS WERE DECISIONS THAT HAD ALREADY BEEN REACHED BEFORE THE STUDY, A LISTING OF ONGOING ACTIONS IN THE NAVAL RESERVE. WE DO FEEL THAT THE REPORT REFLECTED A SINCERE BUT HURRIED AND THEREFORE INCOMPLETE EFFORT TO ADDRESS THE ACTIVE/RESERVE MIX. WE LOOK FORWARD TO WORKING WITH THE NAVY IN DEVELOPING IDEAS WHICH CAN BE INCORPORATED INTO DETERMINATION OF THE OPTIMUM ACTIVE/RESERVE MIX.

SUMMARY

MR. CHAIRMAN, WE HOPE WE HAVE GIVEN YOU AND THE CONGRESS SOME FOOD FOR CONSIDERATION TODAY ON WAYS TO IMPROVE THE WARFIGHTING CAPABILITY OF OUR NATION IN THE MOST ECONOMICAL WAY POSSIBLE.

THE NAVAL RESERVE ASSOCIATION FULLY SUPPORTS THE SECRETARY OF THE NAVY AND THE CHIEF OF NAVAL OPERATIONS IN THEIR EFFORTS TO ACHIEVE MARITIME SUPERIORITY IN THE SHORTEST POSSIBLE TIME. THIS NATION CANNOT AFFORD TO BE SECOND BEST IN THE CONTROL OF THE WORLD'S OCEANS, THE AIR OVER THEM OR THE DEPTHS OF THEM. OUR ASSOCIATION IS FIRMLY COMMITTED TO THE ADMINISTRATION'S EFFORT TO REGAIN NAVAL SUPERIORITY, HOWEVER, WE DO BELIEVE THAT SIGNIFICANT, LONG TERM, SAVINGS CAN BE MADE IF MORE RELIANCE IS PLACED ON THE USE OF THE RESERVE.

WE HAVE STATED THAT OUR PERSONNEL ARE EXPERIENCED AND THAT MOST OF THEIR TRAINING WOULD BE REFRESHER OR, HOPEFULLY, UPGRADING TO NEWER GEAR. REGRETFULLY, MUCH OF THE EFFORT NOW HAS TO GO INTO RETROGRESSIVE TRAINING BACKWARD TO OLDER EQUIPMENT. EQUIPMENT IS THE KEY TO MISSION READINESS AND YOU CANNOT FIND A MORE CAPABLE WARTIME ASSET THAN A RESERVIST TRAINED ON A MODERN WEAPON SYSTEM. MORE AND MORE PEOPLE ARE BEGINNING TO REALIZE THAT FACT.

"TOTAL FORCE" AND "ONE NAVY" ARE TERMS THAT SEEM TO BE COMING OF AGE, TO MEAN WHAT THEY SAY. WE ASK THAT CONGRESS KEEP THE PRESSURE UP TO OBJECTIVELY DETERMINE THE BEST ACTIVE/RESERVE MIX IN THE NAVY. WE APPLAUD THE NAVY'S CURRENT EFFORTS TO ADDRESS THE ACTIVE/RESERVE MIX, HOWEVER, BASED ON PAST EXPERIENCE, THAT EFFORT COULD DISSOLVE RAPIDLY WITH A CHANGE IN MOTIVATING INFLUENCES.

WE HAVE COMMENTED ONLY BRIEFLY ON THE NAVY'S REPORT TO CONGRESS ON THEIR TOTAL FORCE BECAUSE WE HAVE NOT HAD A CHANCE TO DIGEST THE FULL REPORT. WE PRAISE THE EFFORT BUT HAVE RESERVATIONS ON SOME OF THE ASSUMPTIONS USED AND CONCLUSIONS REACHED.

MR. CHAIRMAN, COMMITTEE MEMBERS, NRA SINCERELY APPRECIATES YOUR INTEREST IN PROVIDING THIS COUNTRY WITH A GUARD AND RESERVE CAPABLE OF STEPPING INTO THE BREECH WHEN THEY ARE NEEDED IN A (POSSIBLE) CONFLICT. FOR THE MOST PART, THE CAPABILITY IS THERE IF THE SUPPORT IS PROVIDED. WHEN THE RESERVE COMPONENTS HAVE BEEN MANNED AND EQUIPPED AND WHEN THEY HAVE BEEN CALLED, THEY HAVE PERFORMED ADMIRABLY IN COMBAT AND IN COMBAT SUPPORT ROLES. THE NAVAL RESERVE AND THE OTHER RESERVE COMPONENTS WILL REPAY YOUR EFFORTS MANY TIMES OVER IN COST EFFECTIVE, WARTIME CAPABLE, ASSETS.

[Questions submitted for the hearing record follows:]

QUESTIONS SUBMITTED BY SENATOR BARRY GOLDWATER, ANSWERS SUPPLIED BY ADM. ROBERT T. SCHOULTZ, USN, DEPUTY CHIEF OF NAVAL OPERATIONS (AIR WARFARE) AND GEN. WILLIAM H. FITCH, DEPUTY CHIEF OF STAFF FOR AVIATION, USMC

AIRCRAFT PROCUREMENT

Senator **GOLDWATER**. Admiral, you said that we are not acquiring aircraft in sufficient quantities to attain our force structure goals without increasing the age of our force.

What is the current average age of our carrier-based aircraft?

How many aircraft must be procured each year in order to stabilize the average force age?

How many aircraft are in the Navy's fiscal year 1985 budget request?

Admiral **SCHOULTZ**. The current average age of our tactical aircraft inventory which includes both carrier-based and Marine Corps tactical air (VF, VA, VAM, VAQ, VAW) is 11.7 years. In order to stabilize this average age we must procure an average of 176 tactical aircraft per year over the FYDP. The Department of the Navy has requested a procurement of 158 tactical aircraft in the 1985 budget request.

F-14 RE-ENGINE

Senator **GOLDWATER**. Admiral, what is the projected cost associated with the reengining of the F-14?

Admiral **SCHOULTZ**. The Navy estimate to complete the development, integration, and flight test of the marinized F-110 engine is $150 million (in fiscal year 1984 dollars). Production costs for the F-110 engine will be based on the Air Force contract prices which were competitively established.

Senator **GOLDWATER**. What improvements in performance do you expect?

Admiral **SCHOULTZ**. Replacement of the PW-TF-30 engine with the GE-F-110 engine will improve reliability, durability, and performance. The competitive pricing and warranty package achieved by the USAF alternate fighter engine competition will result in operating and maintenance cost savings and allow our fighter air crews to utilize the full F-14 maneuvering flight envelope without the throttle restrictions imposed by the TF-30 engine.

Senator **GOLDWATER**. How many aircraft will be re-engined? Will you retrofit as well as forward fit?

Admiral **SCHOULTZ**. The Navy expects to incorporate the F-110 engine into a total of 318 aircraft commencing with the fiscal year 1987 production. The possibility of retrofitting the F-110 engine is under review; however, no near term decision is expected. There are no funds programed at this time.

Senator **GOLDWATER**. When will the first re-engined F-14 be delivered to the fleet?

Admiral **SCHOULTZ**. The first re-engined F-14 will be delivered in April 1988.

F/A-18

Senator **GOLDWATER**. Admiral, the production rate of the F/A-18 has been stable at 84 aircraft per year for three years now. If the pressure on the defense budget continues, it is not unlikely that this rate will remain at 84 per year.

What is the cost penalty incurred by stabilizing the F/A-18 production rate at 84 per year?

What offsetting benefits are being realized from FMS production aircraft?

Admiral **SCHOULTZ**. The cost penalty incurred by stabilizing the F/A-18 production rate at 84 per year would be an increase in program acquisition cost of $3.9 billion, which equates to a $2.8 million program unit cost increase.

	Total cost[1]	Unit cost[1]
Program acquisition cost estimate (84 aircraft per year)	$43,847.8	$31.8
Program acquisition cost (December 83 SAR)	39,941.7	29.0
Program acquisition cost increase due to decreased rate	3,906.1	2.8

[1] Then year dollars in millions.

Regarding the benefits from FMS aircraft, the combined benefit of F/A-18 sales to Canada, Spain and Australia is estimated to be a $1.6 billion decrease in the domestic F/A-18 program acquisition cost. The cost benefit is included in the program acquisition cost as shown above.

EA-6B

Senator GOLDWATER. Admiral, the EA-6B has been criticized recently as being ineffective. What deficiencies have been identified in the capabilities of the EA-6B?

Admiral SCHOULTZ. The EA-6B has been equipped, since its fleet introduction in 1971, with the ALQ-92 VHF communications jammer. The device was fielded during the late 1960's prior to the EA-6B and has been extremely unreliable and maintenance intensive. Despite continued efforts to fund the required support, micromanage the assets, and incorporate reliability change proposals, the performance has remained unsatisfactory.

Senator GOLDWATER. What efforts are in development to correct these deficiencies?

Admiral SCHOULTZ. CNO has directed the removal of the ALQ-92 from the EA-6B aircraft and will provide an interim VHF communications jamming capability with the ALQ-99 band one transmitter. The prototype transmitter is expected to undergo testing [deleted]. The ALQ-149 is a new, very capable communications/radar/data link jammer presently under full scale development for the EA-6B.

Senator GOLDWATER. When will the upgraded systems be available to the fleet?

Admiral SCHOULTZ. The ALQ-149 is currently planned and funded for integration into [deleted] ADVCAP EA-6B aircraft. Efforts are underway to accelerate incorporation of the ALQ-149 into [deleted] EA-6B production aircraft.

HARM/LOW COST SEEKER

Senator GOLDWATER. What are the Navy's plans for the development of the anti-radiation low cost seeker?

Admiral SCHOULTZ. A Validation Phase request for proposal (RFP) will be issued in June 1984 to intiate the nine-month Validation Phase commencing in the first quarter of FY 1985. Two or more contracts of approximately $5 million each will be awarded. Each contractor will fabricate a complete brassboard seeker assembly (antenna and receiver) for the ten-inch fixed-body HARM application and conduct a complete design study to determine the application of this technology to reduced performance/smaller diameter anti-radiation missiles.

Senator GOLDWATER. If this seeker is successfully developed, what applications do you anticipate for it?

Admiral SCHOULTZ. At the completion of this 9-month Validation Phase the contractors' brassboard and designs will be tested and evaluated by China Lake. A milestone review in the third quarter of fiscal year 1986 will determine whether the anti-radiation projectile (ARP) technology/design will be:

a. Used to start full scale engineering development (FSED) of a HARM low cost seeker or,

b. Used in selected components injected into HARM production via ECP for cost reduction.

Senator GOLDWATER. How will this seeker affect the HARM program?

Admiral SCHOULTZ. The baseline HARM program is unchanged. At the milestone review, in the third quarter of fiscal year 1986, a determination will be made to proceed with a full scale engineering development (FSED) of a HARM low cost seeker or identify selected components for injection into HARM production via ECP's for cost reduction.

ELECTRONIC WARFARE

Senator GOLDWATER. Admiral, we lost an A-7 and A-6 over Lebanon which were probably shot down by heat-seeking missiles. What protection from heat-seeking missiles do our Navy aircraft have?

Admiral SCHOULTZ. U.S. Navy tactical aircraft currently have two forms of protection from heat-seeking missiles: infrared decoy flares and infrared jammers. Decoy flares are effective when dispensed at the proper time and will protect both helicopter and fixed wing aircraft except when high performance fixed wing aircraft are in afterburner. It is difficult for a pilot to know when to optimally release a flare. A missile approach warning system to automatically dispense the decoy flare is not yet operationally available. To compensate for this shortcoming, the flares are either dispensed manually upon visually sighting the missile, or automatically at fixed intervals while flying within the threat envelope.

Exisiting infrared jammers (ALQ-123 and ALQ-144) are effective only on the A-7 aircraft and light helicopters.

Senator **Goldwater**. What development programs are underway to insure we maintain an adequate countermeasure capability against such weapons?

Admiral **Schoultz**. The Navy is taking several approaches to insure continued protection of our aircraft against heat seeking missiles. One approach is the combined use of a missile approach warning system and flares; another is the use of infrared jammers. Our first priority is a missile approach warning system that will dispense decoys at the proper time. A system is currently in full scale engineering development for our helicopters. A system for our fighter and attack aircraft will enter into advance development in the near future. Improved infrared flares are under development for both fixed wing aircraft and helicopters which will protect them from the heat-seeking missiles of the future.

An infrared jammer which protects medium helicopters from the heat seeking misiles has recently entered production. A variant of this jammer for heavy helicopters is the final stage of development. A program to develop in infrared jammer for fixed wing aircraft is in its stages.

The use of infrared suppressors to decrease the aircraft's infrared signatures is beneficial and efforts to develop a suppressor for heavy helicopters is underway.

RPV

Senator **Goldwater**. The Israelis demonstrated with remarkable success the effectiveness of low cost RPV's during their operations in the Bekaa Valley. I am aware that the Navy has requested permission to reprogram $8 million to procure eight of the Israeli Mastiff RPV's. How will these RPV's be used?

Admiral **Schoultz**. The Israelis utilized the mini-RPV system and decoys during their Bekaa Valley operations. The Navy's reprograming request was for Mastiff and Sampson decoys. The mini-RPV system will be used in support of naval gunfire, surveillance, and contingency operations. Decoys are for contingency operations.

Senator **Goldwater**. What plans does the Navy have for the use of RPV's beyond these initial vehicles?

Admiral **Schoultz**. The mini-RPV system represents a near-term solution, and a follow-on program to further develop the RPV concept is being established.

ADVERSARY AIRCRAFT

Senator **Goldwater**. Admiral, the Navy received $28.7 million last year and is requesting $66.8 million in fiscal year 1985 to purchase adversary aircraft.

What are the candidates for this program?

How does the Navy view the F-20 for this requirement?

Has the Navy received an offer from the manufacturer of the F-20? If so, what were the significant details of this offer?

Admiral **Schoultz**. Several domestic and foreign manufactured aircraft have been previously identified as potentially capable of meeting the requirements of the supersonic adversary mission. These included the F-20, F-16/79, Mirage, Kfir, and other foreign technology aircraft. The Navy currently is conducting a competition for the procurement of up to 24 aircraft over three years and will select the aircraft which best meets the Navy's requirements from among the candidates offered.

On November 15, 1983, the Naval Air Systems Command received responses to its request for quotations for a fixed-price procurement of four aircraft in fiscal year 1984, with fixed-price options for eight aircraft in fiscal year 1985, and twelve in fiscal year 1986. Since this procurment is currently in the competitive process, we are precluded by Defense Acquisition Regulation, Section 3-507.2, from identifying the number or identity of the offerors.

Senator **Goldwater**. In support of the two-phase VTXTS program during 1983 testimony, a requirement for replacement aircraft was identified in fiscal year 1988. If fiscal year 1991 is the new requirement, what management action is needed to operate the existing T-2 and TA-4 aircraft for three or more additional years? What is the cost and risk associated with this management action?

Admiral **Schoultz**. The Navy's requirement for VTXTS remains in fiscal year 1988. However, because of delays of initiating the program and the change in acquisition strategy to provide only carrier capable aircraft, the earliest practical IOC is now fiscal year 1991. It is necessary for our T-2 aircraft to undergo a structural improvement programs to achieve the desired airframe life. There are ongoing improvement programs for the TA-4J which must continue. Late in this decade, we will have to transfer some aircraft from fleet training and support activities into the training command in order to support naval aviator production. The costs for these management actions will be funded in future budgets. The risks are related to availability of funds and possible variations in pilot training requirements.

Senator **Goldwater**. What is the impact on the VTXTS program should the fiscal year 1985 funding be reduced significantly from the request of $113.4 million?

Admiral **Schoultz**. As I stated earlier in my testimony, the VTXTS program has been restructured because of congressional direction to pursue a single-phase program (only carrier capable aircraft). The restructured program is in final Navy review, will soon be presented to OSD and subsequently to Congress. Reductions in funding would impact time to aircraft first flight, the front-end logistic and ground training system design efforts, and the time available for test and evaluation.

RESERVE AIRWING ON 15TH CARRIER

Senator **Goldwater**. Admiral, in your statement you said the 15th carrier would be outfitted with a Reserve airwing.

What is the anticipated deployment for that airwing?

Admiral **Schoultz**. Reserve Carrier Airwings (CVWR) are being modernized and updated and will be designated for the 15th and 16th carriers (CVs), normally the CV in overhaul and the CV in the service life extension program (SLEP). The actual deployment of those assets will depend on the mobilization scenario and how soon the SLEP and overhaul CV can be reworked.

JVX PROGRAM

Senator **Goldwater**. What is the Department of the Navy's view of the JVX program and do you see it impacting the future of the Navy?

Admiral **Schoultz**. The Department of the Navy views JVX as one of its highest priority aviation development programs. JVX is unique in that it was our only aviation new start in fiscal year 1983 and is our only major joint acquisition. The Navy is committed to the development of this breakthrough technology which combines the hover characteristics of a helicopter and the speed, range, and productivity of a turboprop transport.

Our goal for JVX is the fielding of nearly 1,000 common JVX vehicles for the four sevices, with deliveries to the Marine Corps starting in 1991. JVX has enormous potential for a wide variety of missions. We have formed a panel to study the future mission applications of JVX. The panel will evaluate the future missions we have already identified in terms of time phasing and aircraft configuration requirements. Since the scope of the study effort is unconstrained, a broad range of additional mission applications will be investigated. After the panel has completed its work, we will continue to assess derivative applications in parallel with the development program.

JVX's global self-deployability will provide the nation with enhanced strategic mobility for conventional/special operations forces and with a quantum leap in tactical flexibility for the battlefields of the future. We believe that this technology will result in many changes in the way we conduct certain missions. We will only be limited by our imagination.

If JVX turns out as we believe it will, it will cause a revolution in aviation, in both the military and in the civilian sector. This program is an exciting endeavor and we intend to exploit it to the limit.

81MM MORTAR REPLACEMENT

Senator **Goldwater**. Why does the Marine Corps want to replace its current 81mm mortar?

General **Fitch**. The Marine Corps desires to replace the M29 81mm with the improved 81mm Mortar (I81) and a full family of ammunition for the following reasons: the M29 81mm is a weapon reaching the end of its service life, and the I81 offers increased range from 4,750 to 5,775 meters, and increased lethality with new ammunition.

LIGHT ANTITANK WEAPON

Senator **Goldwater**. What are the Marine Corps' plans for acquiring a light antitank weapon?

General **Fitch**. The Marine Corps is monitoring the Army Light Antitank Weapon (LAW) development program of AT4 testing and M72A3 product improvement program (PIP). An acquisition review of these systems is expected in fiscal year 1985.

9MM PISTOL

Senator GOLDWATER. I see that your budget has the 9mm pistol in again. What is new since we turned you down last year?

General FITCH. Current inventory of the caliber .45 pistol has reached the end of its service life, therefore, the Marine Corps needs a personal defense weapon. We support the U.S. Army effort and will buy whatever pistol they come up with. We are concerned more with the need for a personal defense weapon than its caliber.

SPARE PARTS

Senator GOLDWATER. What has the Marine Corps done to correct procurement problems associated with spare parts?

General FITCH. In order to identify problems, comply with DOD direction, and correct deficiencies in the identification, selection, and procurement of spares and repair parts, the Marine Corps:

—Completed an in-depth study of procurement practices in November 1983.

—Is challenging prices early in the provisioning process.

—Has reviewed existing contracts for inclusion of data and data rights provisions to enable competitive reprocurement of spares and repair parts.

—Has submitted a budget request for funding to procure drawings and rights for competitive reprocurement of spares and repair parts when economically feasible.

—Is screening 100 percent of spares and repair parts to identify items in the DOD inventory.

—Is imposing the Replenishment Spare Breakout Program requirements in all new contracts.

—Established critical performance objectives for personnel involved in the procurement of spares and repair parts.

—Has revised and staffed a revision to Marine Corps Order 4200.22 to implement Defense Acquisition Regulation, Supplement No. 6.

—Is recruiting personnel to fully implement the DOD Spare Parts Improvement Program.

5-TON RETROFIT PROGRAM

Senator GOLDWATER. How is the 5 ton retrofit program progressing?

General FITCH. The 5 ton retrofit program is progressing satisfactorily and is on schedule. The 5-ton truck retrofit program is essentially based on retrograding serviceable/unserviceable M39 series assets to the Depot Maintenance Activities (DMA) for retrofitting. Retrofitted M39 series vehicles will be reissued to field activities as a new production model of the M809 series.

The DMA's began production during August 1983. As of January 1984, 57 cargo trucks have been fabricated at MCLB, Barstow and 50 cargo trucks at MCLB, Albany. Production is currently planned through FY89. Only CONUS units will receive retrofit vehicles, except for a limited number of dump trucks which may go to III Marine Amphibious Force (MAF) in Okinawa.

REVERSE OSMOSIS WATER SYSTEM

Senator GOLDWATER. How is the reverse osmosis water system working?

General FITCH. The Reverse Osmosis water system is working very well. The reverse osmosis technology employed in this systems has met or exceeded our requirement based upon reports received from our field testing in Lebanon. Some of the mechanical components of the unit have begun to fail prematurely. These failures have been due to design deficiencies and manufacturer errors. These problems have been common to all users—Air Force, Marine Corps and Army. They are briefly, a galvanic corrosion problem, pump failures, and a multimedia filter failure. A joint service effort led by the Marine Corps is underway to correct these problems. The multimedia filter and corrosion corrective action is well along. It is anticipated those problems will be corrected by June 1984. Proposed solutions to the pump failures and related problems will be reviewed April 1984 and will be corrected during the current procurement. The first unit of this procurement is due for delivery in December 1984. The modification of existing units to correct these mechanical problems is scheduled for calendar years 1985 and 1986.

The priority of repair has been based upon the criticality of the failure. All potentially critical failures will have been corrected with the June 1984 effort.

REPLENISHMENT SPARES

Senator GOLDWATER. I understand that planned funding for replenishment spares has decreased 25 percent for fiscal year 1985, but returns to fiscal year 1983 and 1984 levels in fiscal year 1986. What is responsible?

General FITCH. The original projected requirement for fiscal year 1985 was generally at the fiscal year 1983 level and fiscal year 1984 level. This requirement, however, was decreased due to potential delays in developing contracting sources and consequently delaying the obligation of funds in a timely manner. The requirements were subsequently revalidated resulting in the projected fiscal year 1986 estimate.

MARINE CORPS STOCK FUND

Senator GOLDWATER. The Marine Corps Stock Fund shows significant growth from fiscal year 1983 through fiscal year 1986. What is responsible?

General FITCH. The growth in the stock fund profile during this period is primarily attributable to the increase needed to permit procurement of Prepositioned War Reserve expense-type items to support a sixty day stockage level requirement. In addition, a funding requirement for peacetime inventory build in the area of force modernization was identified beginning in fiscal year 1985. Such funds represent those dollars required for an initial investment in new consumable or expendable items for which the Marine Corps will be the Integrated Material Manager within the Department of Defense supply system.

155MM AMMUNITION

Senator GOLDWATER. What is responsible for the large growth in the request for 155mm ammunition?

General FITCH. The growth in requirements for 155mm ammunition is attributable to the Marine Corps transition from the 105mm howitzer to the 155mm howitzer in direct support battalions, and to the activation of additional 155mm batteries in the general support battalions.

REQUEST FOR ROCKETS

Senator GOLDWATER. What is responsible for the large growth in the request for rockets?

General FITCH. In fiscal year 1984 the only rocket purchased was the Shoulder-launched Multi-purpose Anti-armor Weapon (SMAW). This purchase constituted the second year of the introductory low rate production buy. In fiscal year 1985 we intend to reach full rate production of the SMAW plus we are buying the five inch rocket mortars used to propel linear charges.

MEDIUM EXTENDED RANGE MORTAR

Senator GOLDWATER. What are the Marine Corps' plans for procurement of the medium extended range mortar?

General FITCH. It is assumed that the medium extended range mortar is the 181 mortar. The Marine Corps desires to procure 617 medium extended range mortars and we are earnestly following the U.S. Army efforts in this regard. If the U.S. Army decides not to procure the new mortar, the Marine Corps wants to examine other options available.

LIGHT ARMORED VEHICLE

Senator GOLDWATER. Now that the Army is no longer in the program, what is the Marine Corps acquisition strategy for the Light Armored Vehicle (LAV)?

How many additional vehicles is the Marine Corps planning to buy above the original strategy?

Where will they go in the force structure?

What is the difference in cost expected to be as compared to the original program?

What is the status of negotiations with G.M.?

If Congress funds a number smaller than the number of LAV's requested by the Marine Corps, what will be the impact on the cost?

What is the status of integration of LAV into Marine Corps units now?

What is the status of the testing of LAV variants?

General FITCH. When DOD terminated the Army from the LAV program on December 29, 1983, DON and DOD directed the Marine Corps to develop alternatives that would allow the program to continue on an affordable basis. The Marine Corps' original program had a contract acquisition objective of 555 LAV's spread over 5 years (1982-86) of a fixed price (EPA) multi-year contract. It also had an option to acquire 31 additional vehicles in fiscal year 1986, for a contract total of 586. In an effort to retain the benefits of the original 5 year multi-year contract that were derived from a competitive environment, and to preclude unit costs from escalating, a strategy was developed that shortened the total contract period by one year (1982-85), and preserved the original jointly contracted numbers of vehicles to be procured in fiscal year 1984 (236) and fiscal year 1985 (292).

This strategy resulted in increasing the Marine Corps total contract objective to 758 vehicles vice 586. The additional 172 vehicles are a significant factor in maintaining the original fixed contract prices established in 1982. These vehicles will enable the Marine Corps to achieve an ultimate goal of three active LAV battalions and a Reserve LAV battalion that will enhance our total force concept. It will also enhance the Marine Corps' strategic capability by including LAV companies on MPS, another priority goal.

The original contract which included U.S. Army participation would have provided the Marine Corps with 586 vehicles with a funding profile of $437.9 million. This equates to an average weapon system cost of $747.3K. Had this same vehicle strategy been pursued unilaterally by the Marine Corps its cost would have been $501.5 million, an average weapons system cost of $855.8K. The current strategy will provide the Marine Corps with 758 vehicles with a funding profile of $581.4 million. This equates to an average weapons system cost of $767K. In essence, the 172 additional LAV's will cost the USMC $79.9 million. However, considering that the estimated Army termination fees, $31 million, now being incurred by the Marine Corps, are also included in the $79.9 million difference, the actual cost of the 172 additions is really $48.9 million.

A solicitation was released to the Diesel Division, General Motors of Canada for their proposal on the restructure of the LAV contract on February 29, 1984. Their response to this solicitation is expected by March 30, 1984. Fiscal year 1984 production call-up for the Light Armored Vehicle is anticipated to occur during late May 1984.

If Congress funds a smaller number of LAV's than requested the proposal to the contractor will have to be resubmitted. The smaller number of vehicles will prevent the preservation of the original contract quantities in fiscal year 1984 and fiscal year 1985. This in turn will adversely effect the attempt to maintain the benefits of the original 5 year multi-year contract and the attempt to preclude an escalation of the unit costs.

Light Armored Vehicles have been delivered to the Light Armored Vehicle Crewman's School at Camp Pendleton, CA. The first Light Armored Vehicle Unit, Company A(+), 1st LAV Battalion was activated in July 1983. They will begin receiving their first vehicles in June 1984. The first LAV Battalion to be activated will be the 2d LAV Battalion at Camp Lejeune, N.C. in April 1984.

Developmental and operational testing DT/OT of the LAV-mortar, antitank, maintenance/recovery and logistics vehicles is currently underway at Twenty-nine Palms, CA and Aberdeen Proving Grounds, MD. The mortar vehicle will complete DT testing in April 1984 and complete OT in October 1984. The antitank, logistics, and maintenance/recovery vehicles have completed DT and will complete OT in March 1984. The command and control vehicle will begin DT in March 1984 and is due to complete that testing in May 1984. OT testing for the command control vehicle is scheduled from May to November 1984. No significant problems have been identified in the testing to date. Supplementary testing of the LAV-25 which began in November 1982 is due to be completed in March 1984. All the results from this test are positive. Initial production testing is due to begin in July 1984 and will last approximately four months.

LVT SLEP

Senator **Goldwater**. I understand that the Marine Corps encountered problems in the engines and transmission of the LVT SLEP. What is the status now?

General **Fitch**. The service life extension program for the LVT-7 has experienced problems with the transmission, but not with the engine. A BEE Corporation, a subcontractor to FMC, provided 83 transmissions that did not meet the established rebuild standards. The problem was in quality assurance procedures not the design of the transmission. FMC sent the 83 transmissions back to a BEE Corporation to be rebuilt. FMC and Naval Sea Systems have now provided quality assurance inspectors to insure this problem does not reoccur. No further problems have been experienced since these procedures were instituted.

COPPERHEAD

Senator GOLDWATER. I see that the Marine Corps did not request funds for the Copperhead for fiscal year 1985. Why?

General FITCH. The Marine Corps considered procurement of Copperhead throughout the development of POM 85. The requirement for Copperhead is considered valid, however it was considered less urgent than other requirements. Copperhead was included in POM 85 overguidance to reflect the continuing requirements.

LOGISTICS VEHICLE SYSTEM

Senator GOLDWATER. The Senate Budget Committee, as a part of a plan to reduce fiscal year 1985 defense spending, recently selected procurement of the Logistics Vehicle System as a program which could be slowed down. What would be the impact on cost of the system if this occurred?

General FITCH. Slowing acquisition of the Logistics Vehicles System (LVS) would extend the acquisition beyond the five year limitation for multiyear acquisition imposed by paragraph 1-322.1 of the DAR currently in effect and paragraph 17.103-1 of the FAR which comes into effect on 1 April 1984. This alone would necessitate renegotiation with Oshkosh Truck Corporation (OTC) of the LVS contract. OTC would consider an extension of the acquisition as a breach of the five year multiyear fixed price contract, with an economic price adjustment clause, which now exists. Such a breach of contract could subject the government to pay all or part of the relevant cancellation ceiling as found in the contract. The ceilings are:

[In millions of dollars]

Program year(s) canceled:	*Ceiling*
2d through 5th years	2.3
3d through 5th years	1.7
4th and 5th years	1.1
5th year	.5

In addition to demanding some portion of the cancellation ceiling, OTC could refuse to renegotiate the contract, leaving the U.S. Marine Corps without the urgently needed vehicles. If OTC were willing to renegotiate the LVS contract, they could demand additional recurring costs and increased hardware manufacturing costs. Recurring costs would increase because of the lengthened acquisition. Manufacturing costs per unit would rise because OTC is already contracted to produce the LVS at one and one-half vehicle systems per day while DCAA Chicago has determined OTC's economic production quantity to be six vehicles per day. Any decrease in daily production will raise hardware prices.

Only renegotiation of the LVS contract will identify the exact cost impact of slowing the LVS acquisition. However, the slowing of the LVS acquisition for one year could ultimately cost the Marine Corps several million dollars. If the slow down would cover more than one year, the additional cost could approach $4-5M.

M1E1 TANK

Senator GOLDWATER. What is the status of the Marine Corps evaluation of the M-1 tank? When will the results be available to this committee?

Do you anticipate that the exhaust from the tank's turbine engines while warming up in holds of ships will be a problem?

Are there other Marine Corps unique requirements insofar as they affect the M-1 tank?

General FITCH. The Marine Corps is currently monitoring the Army's Operational and Developmental Testing of the M1E1. Testing of Marine Corps unique requirements which require the evaluation of the M1E1 in an amphibious environment will take place during July, August, and September 1984. If the tests proceed on schedule, testing results should be available during October 1984.

In addition to evaluating the volume and temperature of heat generated by the M1E1 to ensure compatibility with U.S. Navy ships and landing craft the Marine Corps unique portion of the testing will also evaluate:

The potential corrosion problems incurred by the M1E1 when operated in a Maritime Environment.

The operational capability of the M1E1 with U.S. Navy Amphibious Ships and assault landing craft.

The best method to prevent discharge of high temperature exhaust gases onto other equipment located within 30" of the exhaust outlet.

The feasibility of applying a tank/infantry phone on the M1E1.

No unresolvable problems are anticipated as a result of this testing.

AV-8 SAFETY

Senator GOLDWATER. General Fitch, what was the accident rate for the AV-8A during 1983?

How does that compare with the AV-8A accident rate during 1982?

What were the causes of the accidents during 1983?

What steps has the Marine Corps taken to improve the safety record of the AV-8?

General FITCH. The mishap rate for the AV-8A/C aircraft in 1983 was 34.17. While this number appears high, it is reflective of a small community (3 tactical, 1 training squadron) which generates only a limited number of flight hours. A comparable situation exits with our EA-6A community, where only 2 mishaps in 1983 resulted in a rate of 36.2.

The mishap rate for the AV-8A/C aircraft in 1982 was 40.57.

There were five mishaps in 1983. Three of these were due to maintenance error, one was due to a material failure of the engine, and one was due to pilot error.

As noted in previous testimony, the range of improvements applicable to the AV-8A/C aircraft has been thoroughly evaluated. Management initiatives, including pilot selection, pilot training, operational techniques and employment have been implemented and have resulted in a reduction in the "pilot and supervisory factor" component of the accident rate. Unfortunately the original airframe, avionics and engine configuration of the old Harrier design is not provisioned to accept many of the new design improvements that are incorporated in modern aircraft.

To significantly reduce the mishap incidence of the Harrier it is vital to move on to the better design and modern technology of the AV-8B, the Harrier II. This new aircraft was designed, in part, to correct the handling and reliability deficiencies of its predecessor. All reports to date, from the contractor test pilots, the Navy and Marine test pilots, and the first fleet pilots transitioning to the production aircraft indicate that the improvements exceed both expectations and requirements.

When the older AV-8A/C model is finally retired from active service in 1986 the Harrier mishap record represented by the AV-8B, Harrier II, is projected to improve and conform to the norm maintained by conventional light attack aircraft.

AV-8B IOT&E

Senator GOLDWATER. General Fitch, you referred to deficiencies in the AV-8B identified during its initial evaluations. Would you be more specific, please.

What deficiencies were identified?

What solutions are required?

How will these deficiencies affect the cost of the program?

Will the production schedule be adversely affected?

When do you expect these deficiencies to be corrected?

General FITCH. During initial developmental testing and the extensive, four-phase Initial Operational Test & Evaluation evolution conducted during the past eighteen months, three basic concerns were identified:

Performance: Inadequate acceleration and low altitude maximum airspeed.

Engine: Inadequate "surge margin" in both low and high altitude regimes.

Avionics: Immature weapon system functional integration and software; Communication deficiencies utilizing the Navy standard ARC 182 UHF/VHF radio.

Resolution of deficiencies identified during testing is the function of the Full Scale Development program. Each of the problems identified by the initial evaluations has either been resolved or is being corrected within the scope of the production contract signed between the Government and the prime contractors. Status of the major efforts:

Performance: Acceleration and low altitude airspeed deficiencies were corrected by uprating the Rolls Royce F402-RR-404A engine, and by redesigning the inlet to provide more efficient mass flow to the engine. The improved performance meets Marine Corps operational requirements.

Engine Surge Margin: Technical investigations conducted by a joint Naval Air Systems Command/Rolls Royce engineering team identified the problems and guided a successful effort established to resolve the "surge" problem. Aircraft equipped with an interim "minimum standard" F402-RR-404A engine have been tested by contractor and Navy test pilots and been found "surge free" in the low altitude regime and "surge free" within the authorized high altitude operating envelope established for the AV-8B. When the Full Production standard F402-RR-406 engine with digital fuel control is provided in fiscal year 1985, the aircraft operating reliability and operating envelope will be further improved and expanded.

Avionics: Routine and ongoing refinements and "debugging" of the weapons system software are resolving weapons system deficiencies. ARC-182 radio communication deficiencies have been reduced, but are the object of ongoing test and development.

The deficiencies identified will not affect the cost of the AV-8B program. The correction of these deficiencies has and will be accomplished within the scope of the FSD contract. Incorporation of corrections is provided within the provisions of the Firm Fixed Price contract for fiscal year 1983 procurement.

No production problems or perturbations have been identified.

All deficiencies are expected to be corrected prior to the start of Operational Evaluation which is scheduled for August 1, 1984.

Senator GOLDWATER. Thank you very much Admiral Schoultz and General Fitch, it has been a real pleasure.

The meeting stands adjourned.

Admiral SCHOULTZ. Thank you, Senator.

[Whereupon, at 3:30 p.m., the subcommittee adjourned, subject to call of the Chair.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1985

MONDAY, MARCH 12, 1984

U.S. SENATE,
SUBCOMMITTEE ON TACTICAL WARFARE,
COMMITTEE ON ARMED SERVICES,
Washington, D.C.

AIR FORCE TACTICAL PROGRAMS

The subcommittee met in executive session, pursuant to notice, at 1:50 p.m., in room SR-222, Russell Senate Office Building, Senator Barry Goldwater (chairman) presiding.

Present: Senators Goldwater, Wilson, Kennedy, and Bingaman.

Staff present: William E. Hoehn, Jr., José E. Martinez, Carl M. Smith, professional staff members; Tamara L. Farnsworth and Patricia L. Watson, staff assistants.

Also present: Gerald J. Smith, assistant to Senator Goldwater; Les Brownlee, assistant to Senator Warner; Jon Etherton, assistant to Senator Jepsen, Mark J. Albrecht, assistant to Senator Wilson; Peter D. Lennon, assistant to Senator Levin; James Steinberg, assistant to Senator Kennedy; Edward McGaffigan, Jr., assistant to Senator Bingaman; and Charles C. Smith, Jr., assistant to Senator Dixon.

OPENING STATEMENT BY SENATOR BARRY GOLDWATER, CHAIRMAN

Senator GOLDWATER. The committee will come to order.

The Tactical Warfare Subcommittee meets this afternoon to review Air Force tactical programs in the fiscal year 1985 defense authorization request.

We are pleased to welcome the Honorable Thomas E. Cooper, Assistant Secretary of the Air Force for Research, Development and Logistics, and Lt. Gen. Robert D. Russ, Deputy Chief of Staff for Research and Development.

It is clear that the decisions made by Congress regarding the fiscal year 1985 budget will have far-reaching implications for the future of our tactical forces. The size of those forces, their composition, readiness levels and the pace of modernization will all be influenced this year as Congress balances the requirements for defense against the need to reduce the growing Federal deficit.

Particularly close attention will be paid to such programs as the dual role fighter, the alternate fighter engine, LANTIRN, and

AMRAAM—each of which will consume a significant share of the Air Force's tactical budget.

It is no secret that reductions will have to be made. Some programs will be stretched out—others may be canceled altogether. And though I know that each of these adjustments will have some adverse impact, I hope we will be able to make them in a way that minimizes the damage to our defense posture.

It is unfortunate that the demand to reduce defense spending comes at such an inopportune time. The threat confronting our conventional forces is large, modern and sophisticated. This is not the time to retrench our expenditures on either readiness or force modernization if we are to meet that threat. I can't emphasize that too much, gentlemen.

We don't even know yet how much money we are going to have. I have seen a tentative figure. There was another one that says Senator Tower was not able to present it because we couldn't get agreement with the White House.

They are working today. We are trying to do our best to keep defense spending close to what the President wants. You have to remember that our biggest enemies are sitting out on the floor, not necessarily in this room.

So, you get accustomed to the idea that you will have some cuts. I don't know how much.

It is a real pleasure to have you with us this afternoon. We welcome you and look forward to your testimony. If you have prepared statements you wish to put in the record, they will be put in the record as if read and then you can just summarize and touch on anything you want. So, it is all your show.

STATEMENT OF HON. THOMAS E. COOPER, ASSISTANT SECRETARY OF THE AIR FORCE RESEARCH, DEVELOPMENT AND LOGISTICS

Dr. **Cooper**. Thank you, Mr. Chairman.

We do have several prepared statements that we would like to put in the record, one, General Russ and I have jointly prepared and also General Hansen is here with us from the DCS for Logistics and he likewise has a prepared statement.

It is indeed a pleasure to appear again. I might mention, Senator Goldwater, after the hearing today I depart for Tucson.

We are rolling out the first C–21 tomorrow. I am sorry you can't join us, but I know you have a hearing.

Senator **Goldwater**. You have a great bird there. I had the pleasure of sitting in with them when they were dreaming that program up. I think it is one of the best we have ever introduced. I hope that other commands will take the same approach and really cut our costs and provide us with good equipment.

So, have a good time down there.

Dr. **Cooper**. Thank you.

I would like to take a moment and I am not going to take a lot of time, but I would like to amplify on a remark I heard you make several weeks ago at the Worldwide Commanders Conference at Homestead Air Force Base.

As I recall, you remarked it was your belief, based on your travels around the country and indeed around the world, that the Air Force is in the best shape it has been in in years. I truly believe that.

Just a few indicators: I think the people we have in the Air Force today are extremely high quality people. I don't know if you know it or not, but 98 percent of all the people that enlist in the Air Force today are high school graduates. We have been turning them away at the door.

There have been a couple of indicators during the last couple of months that that was down slightly. I am hopeful that will turn back up. I think in large measure that is the result of fine support we have gained from the Congress in the last few years in the pay and benefits area.

Flying hours are up. Our ability to generate sorties is up. I think proficiency is up today. That is in large measure due to the realistic training we conduct. I know you have been out to Red Flag and observed exercises like that.

Our airlift is also improving. I think all in all, Senator, we are happy to report that we have a ready, modern Air Force on the ramp. That is not to say we can't improve it. We certainly can. That is not to say that we don't have our problems. We certainly do.

We will take part of your time today to discuss some of the problems we have. Let me assure you we are very well aware of the problems that we are going to face in Congress this year.

Every committee we appear before asks us for our list of priorities. I am compelled to tell them that we really didn't come to cut the budget, we came to defend it. I think we have a good story to tell. After we tell the story we recognize the fact there will be hard times ahead of us this year.

Senator GOLDWATER. We have almost 14,000 young people trying to get in the Air Force Academy. That is a good indication of what we have ahead of us.

Dr. COOPER. That is a good sign. I hope the trend continues that way.

A very positive sign we see today is in the area of retention. As you well recall, back in the late seventies, in that critical experience age group 6 to 11 years we were losing three out of four of our pilots.

Today there has been a complete inverse of that; we are retaining three out of four pilots in that year group.

I am going to turn the mike over shortly to General Russ who will give you a very brief overview of our tactical Air Forces and concentrate a little more thoroughly on this issue of readiness which is a bit on the front pages of the newspaper recently. They claim, that after spending all these billions of dollars, that our readiness has actually gone down.

Let me assure you that is not the case. Our spares pipeline is filling, that is to the fine support we have received from the Congress. We are starting to see the benefits of that in the field.

General Russ will show you in detail some of those indicators. After he does that, he is going to turn to a discussion of our tactical fighter roadmap which I think you will find very interesting.

I was corrected the other day before the House. Mr. Stratton said to me it should not be called fighter roadmap, but tactical fighter airmap. So, I think we will rename it.

In essence, it lays out a 10-year program for acquiring the aircraft over these next 10 years. It will discuss the size of our fighter force, the mix of aircraft that we have and the proposed procurement strategy that we would like to follow over the next 10 years.

After General Russ' presentation, both General Monahan and General Gorton have presentations of their own they would like to make on some of the key Air Force programs that I know you are interested in.

I also would like to take the opportunity to introduce Gen. Al Hansen who works for the Deputy Chief of Staff for Logistics and Engineering who is here to respond to questions as they might relate to our spares fund and readiness in general.

With that, Mr. Chairman and Senator Bingaman, I would like to turn the microphone over to General Russ who will give you an overview of the tactical program.

STATEMENT OF LT. GEN. ROBERT D. RUSS, DEPUTY CHIEF OF STAFF, RESEARCH AND DEVELOPMENT, U.S. AIR FORCE

General RUSS. Thank you, sir.

It is good to be back and discuss programs that are near and dear to my heart, the Air Force tactical program.

I would like to start out by looking at what our fighter attack force objectives are. I will use this as kind of an overview as I go through this first part of my briefing.

FIGHTER/ATTACK FORCE OBJECTIVES

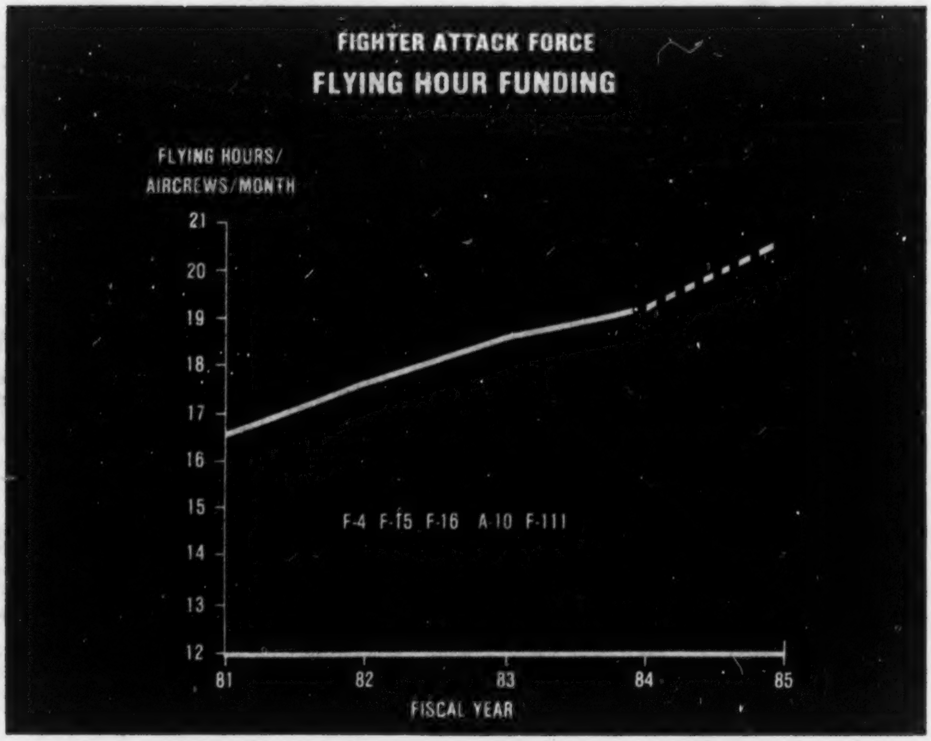
Increase readiness and sustainability of current forces.
Modernize our strategic air defense force.
Flesh out, modernize and sustain a 40 tactical fighter wing force.

First, we want to increase the readiness and sustainability of our current forces.

Second, we need to worry about our strategic air defense forces. Therefore, we need to modernize those.

Third, we need to flesh out, modernize, and sustain tactical fighter wing force.

Three measures of readiness and sustainability are flying hours, munitions and spares.



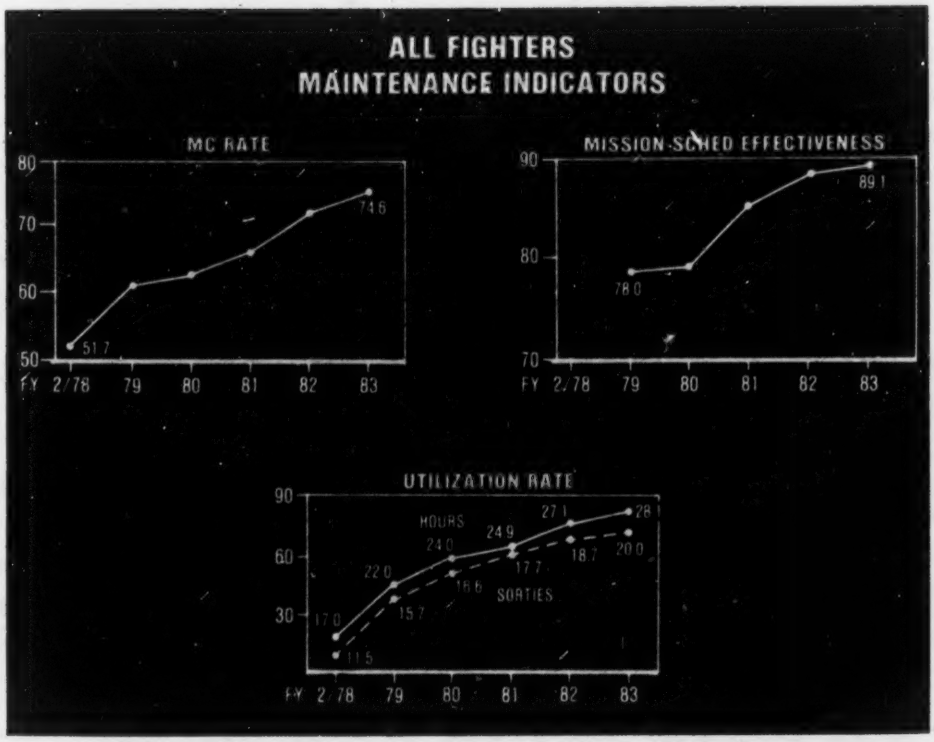
This chart shows how many flying hours our fighter crews have received per month starting in 1981. You can see in 1981 the F-4, F-15, F-16, A-10, and F-111 crews averaged about 16½ hours per month.

You know as well as I that is not enough to maintain proficiency. Because of the funding we received through Congress, we were able to increase that flying hour rate and in 1984 we are at about 19½ hours. We will reach our goal of 20½ hours in 1981.

Senator GOLDWATER. That is still not enough.

General RUSS. It is still less than we would really desire. When I came up, we flew about 24 to 25 hours a month. That appeared to be about right. Whether we can get to that level or not, I don't know.

Certainly, in the near term it is a significant improvement since 1981.



Now, along with that improvement in flying hours, our maintenance indicators have all gone in the correct direction. That is, they have all gone up. This line shows all fighters in the Tactical Air Command.

As an example, it shows the mission capability rate, those airplanes that are fully mission capable have increased from a low of about 51 percent back in the later part of the seventies to 74.6 percent at the end of 1983.

The mission scheduling effectiveness rate is described as the measure of the effectiveness of each sortie that is flown. In other words, if you are scheduled to go on a mission that requires all the systems working and you fully complete that mission, then you get a successful sortie.

Eighty-nine percent of all sorties flown have been successful. More importantly, down here this indicates a reflection of the spares. It shows that the sorties and the hours that have been flown on each aircraft has increased.

As an example, in 1980 we averaged 16.6 sorties per airplane. By 1983 we had increased that to 20 sorties per airplane.

Similarly, we had 24 hours per airplane per month. That increased to 28 hours in 1983. So, the flying hours are up and all the maintenance indicators are up.

Senator BINGAMAN. If I could ask before you go on to the next chart, it seems from those three charts the year of greatest improvement was 1978 on two charts.

You don't have it on the third chart.

What was the explanation for the dramatic improvement in 1978?

General RUSS. Sir, we were in a spiral, what we call in the Tactical Air Command, a slippery slope. We kind of went down that slippery slope after Vietnam; 1978 was the turnaround year. What happened in 1978 is we took a look at what we were and where we were in training. We also took a look at our fighter organization.

We decided that we had hit rockbottom. We made some organizational changes. We made some leadership changes. This corresponds to the time when General Creech took over the Tactical Air Command. We made some major changes through here.

This primarily attests to leadership and organization. We just went out and did the job better. We set goals and standards.

Senator BINGAMAN. Is there a reason why you don't have 1978 on that other chart?

General RUSS. This is 1978, 1978, 1978.

Senator BINGAMAN. I don't see a line where it goes.

General RUSS. No.

Senator BINGAMAN. Thank you.

AIR-TO-AIR MISSILES

General RUSS. Air-to-air missiles. Back in 1981 we had about [deleted] percent of the air-to-air missiles required. This line is not as high as I would like to see it, but it does represent a gradual and steady progression inventory of air-to-air missiles.

We reach our goal of [deleted]. Let me say that in the air-to-air missile procurement business we have funded [deleted] percent of our AIM-9 missiles, our Sidewinders.

We have not funded [deleted] percent of our beyond-visual-range missiles. The reason we haven't is because we are transitioning from the AIM-7 missiles to the new AMRAAM missile.

This is the first year of that transition. Should we have problems with the AMRAAM and should it not come into the inventory this year, or should we not put money on the procurement this year, we would use that money to buy the other type of missile, the AIM-7.

Senator GOLDWATER. Let me ask you a question, if I can put it in a broad way.

A number of years ago we had enough air-to-air missiles in NATO for about 1½ to 2 sorties.

Is that not much better?

General RUSS. Sir, it has gotten better. I am not sure what the stockage is in theater. Part of our problem is stockage of missiles. We have missiles, but they are not at the right places.

Part of that problem has to do with storage capability. I don't know the total number of sorties we have available.

Al, do you know offhand?

General HANSEN. I don't know offhand.

Senator GOLDWATER. Can you get that for the record in a form that is not going to be too highly sensitive?

General RUSS. Yes, sir.

[The information follows:]

NUMBER OF SORTIES

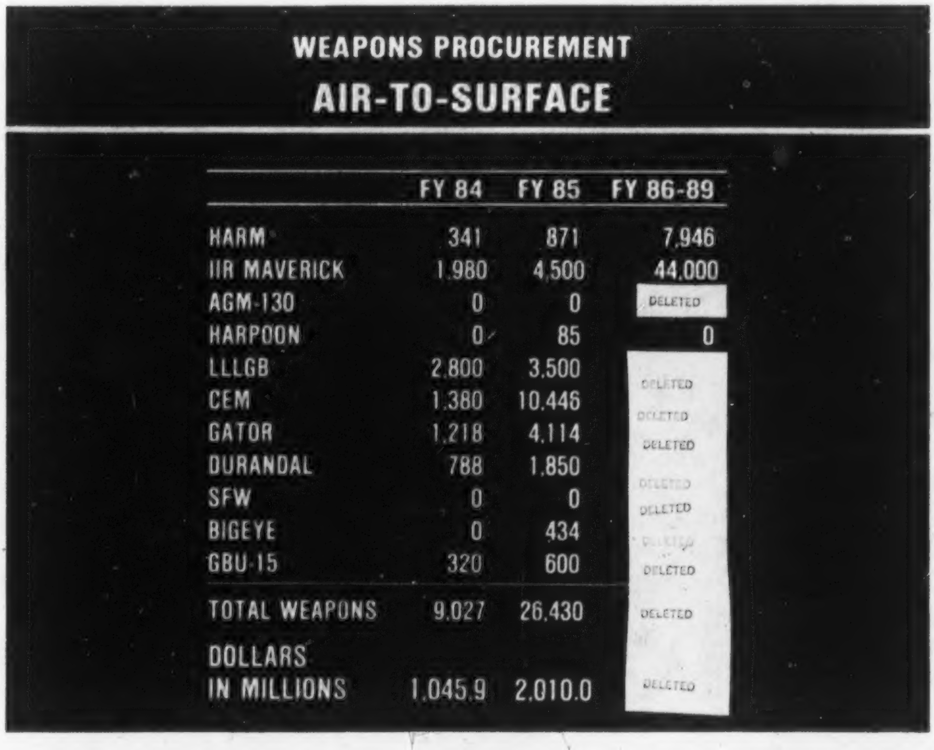
Currently, the USAF has [deleted] air-to-ground missiles prepositioned in NATO. These missiles would be used primarily by [deleted]. If the [deleted] were also used by other aircraft in NATO (i.e., [deleted] as planned, the total available [deleted] sorties would be approximately 5,500–6,000. With the [deleted] missiles realistically being used by many USAF aircraft in antiarmor/defense suppression roles during the initial Warsaw Pact thrust, this would result in approximately 3–4 days of [deleted] sortie availability. By 1989, there will be approximately [deleted] prepositioned in NATO. This increase is based on programed procurement of the [deleted].

Senator GOLDWATER. We were very, very deficient at that time. I would like to know if we are not more efficient.

Dr. COOPER. Senator, I think we can make the following statement:

In terms of the Sidewinder missiles, we are in good shape today, the heat-seeking missiles. We have improved, but we are still deficient in terms of the radar missiles, the Sparrow.

I, too, was in Europe several years ago and we were one load out on the Sparrow. We are better today, but we are not where we should be.



WEAPONS PROCUREMENT

AIR-TO-SURFACE

	FY 84	FY 85	FY 86-89
HARM	341	871	7,946
IIR MAVERICK	1,980	4,500	44,000
AGM-130	0	0	DELETED
HARPOON	0	85	0
LLLGB	2,800	3,500	DELETED
CEM	1,380	10,446	DELETED
GATOR	1,218	4,114	DELETED
DURANDAL	788	1,850	DELETED
SFW	0	0	DELETED
BIGEYE	0	434	DELETED
GBU-15	320	600	DELETED
TOTAL WEAPONS	9,027	26,430	DELETED
DOLLARS IN MILLIONS	1,045.9	2,010.0	DELETED

General RUSS. This chart shows our procurement on air-to-surface weapons. This is what was authorized and appropriated last year.

You can see we procured some 9,000 weapons for a little over a billion dollars.

We have been criticized in the press that we were not procuring enough air-to-ground weapons. Let me assure you that that is not true.

This is what our 1985 budget request calls for. It calls for 26,000 weapons or approximately three times what we bought in 1984 and about double the dollar amount that we spent in 1984.

If you look at the time frame from 1986 through 1989 or through this 4-year time frame, you can see the significant number of weapons we are buying and the significant dollar amount.

This is about [deleted] weapons per year. So, we are procuring weapons and we are procuring at what I think is a very rapid rate.

These, if you will, are preferred munitions.

Now, when we talk about the sustainability, I think that best can be shown in a discussion on sorties. The left side of this chart [chart deleted] indicates the number of sorties that we could fly from D-Day to D-plus 60 in thousands.

What that says in 1981 is our war mobilization plans call for us fly a little over [deleted] days.

Now, our spares to support that [deleted] are shown by this line. Significantly from 1981 where we could fly about [deleted] where we could fly about [deleted].

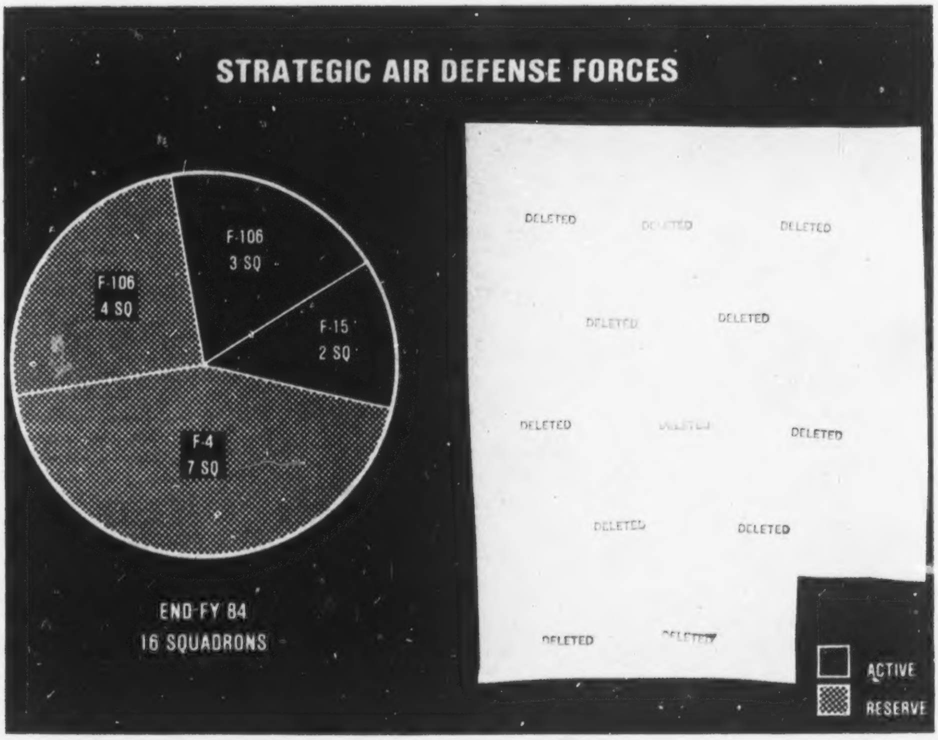
That is because we got the weapons and that is because we got the spares to be able to do that.

I think that is an excellent measure of what improved capability we have in the force. When you add to that the preferred munitions mix, you can see that that also is going up.

It was down here and I am sorry for not having tracked it back a little farther, but it was down on this area before. That doesn't mean we don't have enough munitions to fly that line. We do. We have enough munitions to fly every sortie in the program.

We don't have the total number of preferred munitions.

Let me move now to the second which is modernization of our strategic air defense force.



STRATEGIC AIR DEFENSE FORCES

END FY 84
16 SQUADRONS

Currently in our strategic air defense force we have F-4's, F-15's and F-106's. At the end of the fiscal year 1984 we will have 16 squadrons composed of those aircraft with the number of squadrons indicated.

The better part of them are in the Air Reserve Forces. We plan on phasing out the F-106. Over the next 5 years the air defense force will change in character as shown on this slide.

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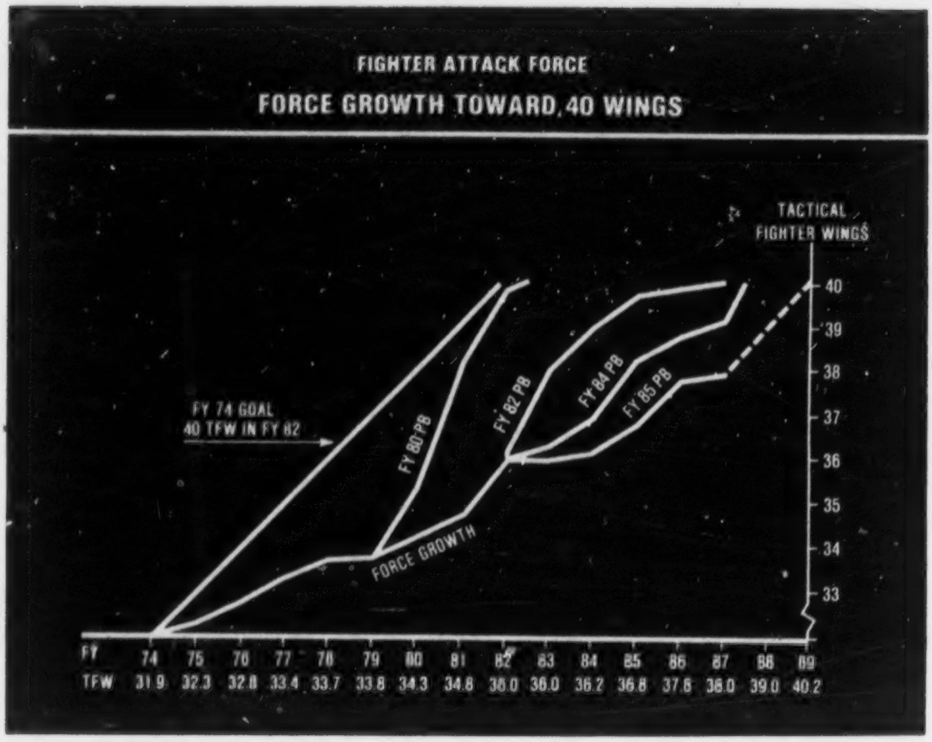


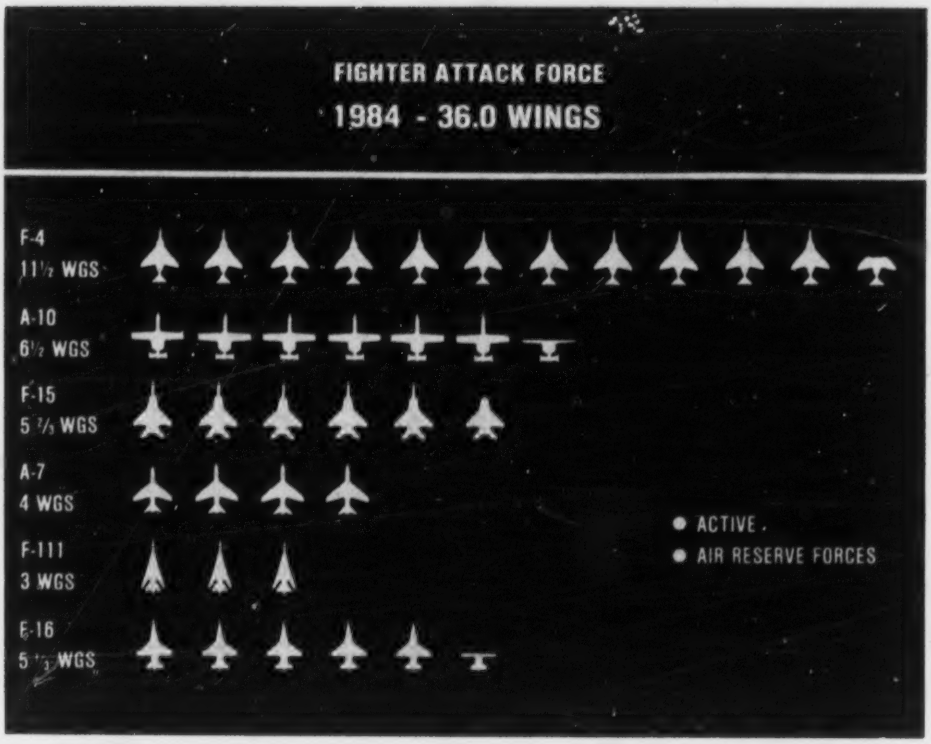
Now, moving on to the third billet, the 40 tactical air fighter wing force. Let me start by saying that back in 1974 the Air Force received approval to grow to a force of 40 tactical fighter wings. That was approved in the Secretary of Defense's office and approved by Congress.

At that time we expected to reach 40 wings in 1982. That didn't happen. Here is what happened. A much more gradual approach and in 1981 the President's budget again tried to get us up to that level. Again, that didn't happen.

In 1982 we had gotten to about the 36-wing level and we again programed 40 wings and as you know, that didn't happen again, 1984 budget and 1985 budget.

Here we have with the 1984, and this is our latest projection to get to our 40 tactical air fighter wings. I think this is a more realistic growth pattern.

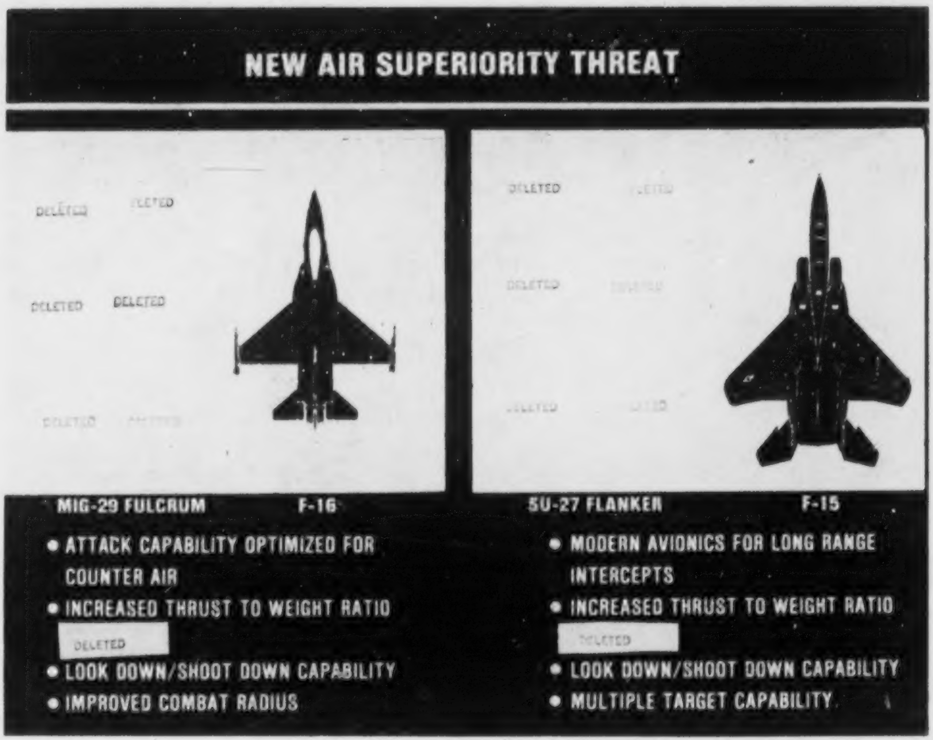
I say that because it seems to be about the track we have been on. Probably too ambitious back here in 1974 to 1980, but I think it is a realistic path that we are on now.



Here is what our current force looks like. Thirty-six tactical fighter wings. Each wing has the equivalent of 72 airplanes composed of the airplanes pictured on the left and numbers of equivalent wings shown here.

As you can see, about a third of that force represented in the orange is in the Air Reserve Forces.

Now, what does our enemy look like? He has [deleted] equivalent tactical fighter wings. These are some of his airplanes on the left. It is significant to note he has [deleted] wings of Mig-23 and Mig-27's. That is more than we have in the entire Active and Reserve Air Forces.



NEW AIR SUPERIORITY THREAT

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MIG-29 FULCRUM **F-16**

- ATTACK CAPABILITY OPTIMIZED FOR COUNTER AIR
- INCREASED THRUST TO WEIGHT RATIO

DELETED

- LOOK DOWN/SHOOT DOWN CAPABILITY
- IMPROVED COMBAT RADIUS

SU-27 FLANKER **F-15**

- MODERN AVIONICS FOR LONG RANGE INTERCEPTS
- INCREASED THRUST TO WEIGHT RATIO

DELETED

- LOOK DOWN/SHOOT DOWN CAPABILITY
- MULTIPLE TARGET CAPABILITY

What he is doing to modernize the airplanes—this is just two examples. These are two new air superiority fighters.

On the left you see the Mig-29 which we equate to the F-16. It has better thrust to weight ratio. It has look-down/shoot-down capability and improved combat radius.

On the right he is building the Flanker which is equivalent to the F-15, similar sort of increased performance and sophistication in his fighters.

FIGHTER ATTACK FORCE FUTURE PLAN

Meet a threat that possesses numerical superiority; is fielding technologically advanced systems; and confronts us worldwide.

Strategy must provide for: required force size; required force mix; and required modernization.

Air Force tactical fighter roadmap outlines our plan.

Therefore, what we have done is design ourselves a road map because we know we must meet that potential superior threat which has superiority in numbers now.

Technologically it has advanced systems in it. We must have the strategy that will provide us with the number of fighters we need, the proper mix and modernization strategy.

That is what the tactical road map does.

I would like to now move into that tactical road map.

Dr. COOPER. Before you start, I felt it was important to put together a tactical fighter road map, if for no other reason, than to try to explain to the Congress why we are doing what we are doing. Because having seen these individual systems debated over the last several years and although you are well familiar with the F-15 and F-16 missions, we also have been talking about dual role fighters, talking about alternate fighter engines, talking about Lantirn systems, AMRAAMS, and Mavericks.

Many of these systems right now are just leaving development and entering production and/or represent change in the models of aircraft we have.

It seems to me important to put that mosaic together as a total picture to explain exactly why we are doing what we are doing in terms of the types of aircraft that we are proposing to buy, the mixes and the numbers and the total force structure.

I think you will see what General Russ has put together is very elegant and simple. It is a procurement strategy that lays out various types of tactical fighters we are going to be buying over the next 10 years.

We are essentially talking about two aircraft for the majority of that 10-year period. Various models of the F-15 and F-16 are to be followed in about the 1983 timeframe by, hopefully an advanced tactical fighter.

First and foremost what we are trying to do is extract as much capability out of the current generation aircraft as we can by putting improved sensors and improved weapons on those platforms, also by improving the engine and then once we have done that, we will follow that with the next generation aircraft that we call the advanced tactical fighter.

I think that was a very good reason for melding this all together because if we don't do that, we are going to debate these individual systems in isolation and you tend to lose sight of how they all play together.

I think you will find General Russ' briefing very informative on that. I think we are going to call it the air map.

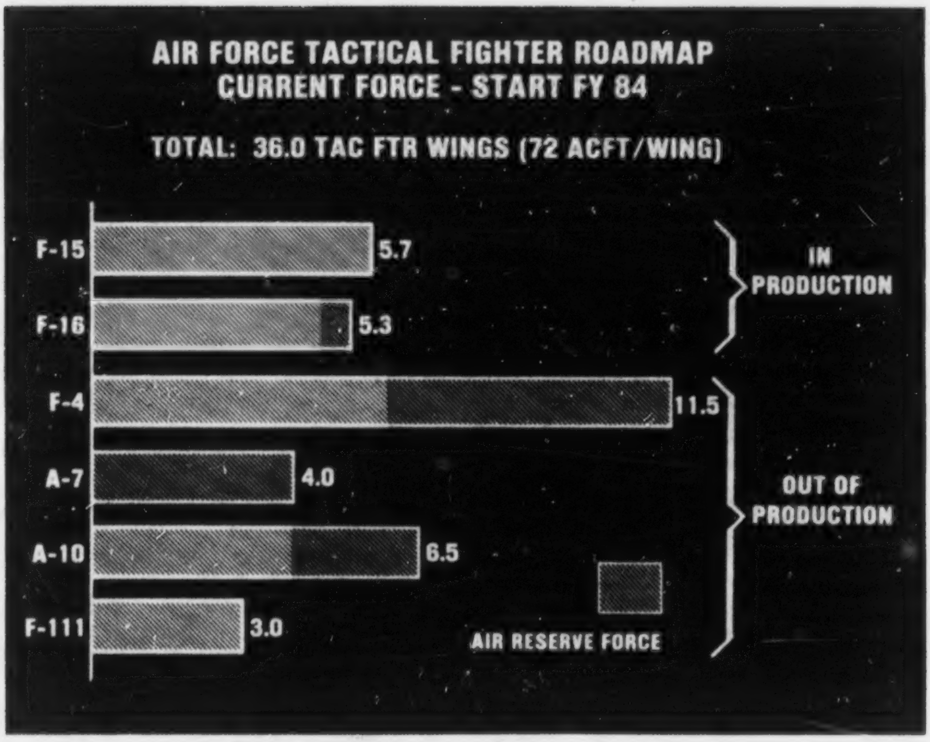
AIR FORCE TACTICAL FIGHTER ROADMAP OVERVIEW

Current force: status—size, age and phase out plans; and modernization programs.
Future force: procurement strategy; and 1993 force structure and capability.

General RUSS. The roadmap is divided into two sections. The first section discusses the current force and concentrates on the size of it, the age, phaseout plans, and what modifications we propose to that force.

Then the second part addresses the procurement strategy to get to the future force. In that part we are interested in the number of fighters we need to buy, and the mix of fighters.

We are also interested in certain specified capabilities that must go on those fighters. Then we will look at what the force looks like in 1993.



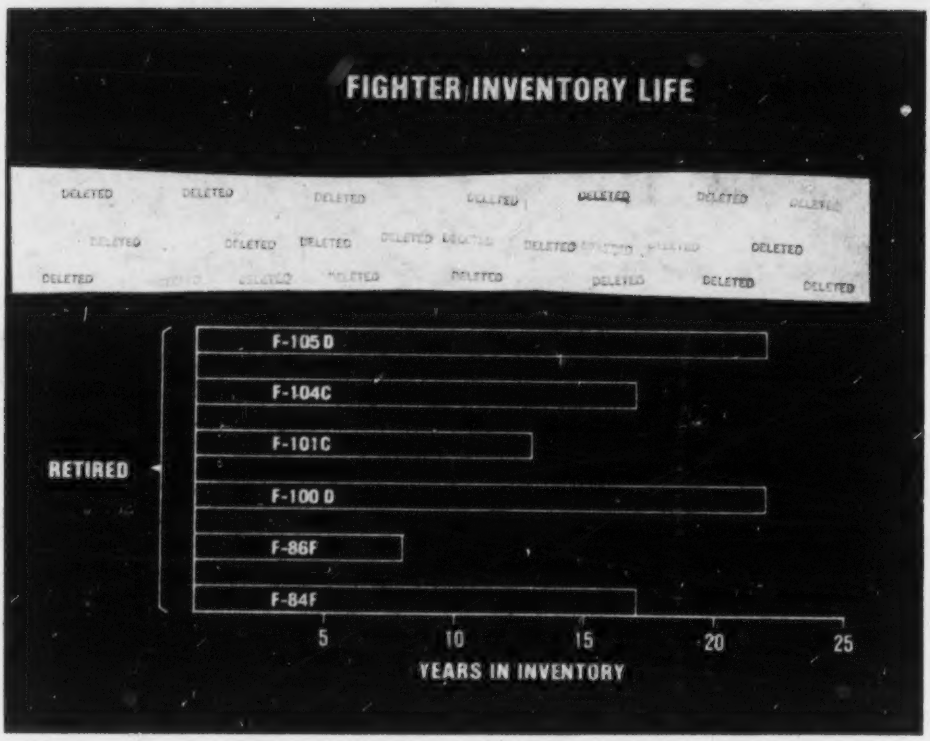
AIR FORCE TACTICAL FIGHTER ROADMAP
CURRENT FORCE - START FY 84

TOTAL: 36.0 TAC FTR WINGS (72 ACFT/WING)

Now, I addressed this in the previous slide. I throw it up here again just to highlight a couple of points.

As you know, the F-4, A-7, A-10 and the F-111 are out of production. Only the F-15 and F-16 are currently in production. Now this force is aging and some of these aircraft require special modifications to be able to continue to combat the threat.

Now, when we talk about aging, we need to understand that aircraft are removed from the force for two reasons, one, when they become technologically obsolete and the second reason, when they no longer can be maintained.



This chart shows the useful life of a variety of former tactical fighters. What it says is that, as an example, the F-84F was retired from the inventory in about 17 years primarily because it was technically obsolete.

The F-86F we retired in less than 10 years because it was technically obsolete. The F-100 and F-105 simply wore out. The F-101 and the F-104 also were retired because they were technically obsolete.

[Deleted.]

So, what this chart says is that the useful life of a fighter varies. It varies by models and it varies by missions, but on the average we plan a useful life of a fighter of [deleted] years.

Senator GOLDWATER. I have heard Dr. Delauer talk about upgrading the F-4. Do you think that is possible or feasible given the age of the airplane?

General RUSS. For our F-4's, no.

I will show you a chart in a minute that will bring that point out exactly.

Senator GOLDWATER. It will remain a good airplane for the Reserve and National Guard to fly.

Will it be as capable of meeting a threat 5 years from now as it was 5 years ago?

General RUSS. No, sir, it won't. Certainly we can improve the avionics in the F-4 and improve the engines in the F-4, but it still has the basic aerodynamic shape. That you can't change. Therefore, it will not perform as the F-16 or F-15.

You can give it as good a bombing accuracy, but you can't give it as good air performance.

Senator KENNEDY. Is there money in there to modernize or upgrade the F-4?

General RUSS. Sir, there is $16 million.

Dr. COOPER. We will check that, Senator. I just had a discussion before we came over. I think it is $8 million in 1985 that has been added specifically for F-4 reengining.

F-4 REENGINING

There is $8.0 million in the fiscal year 1985 budget to fund a modernization demonstration of the F-4. The funds were added to PE 27136F, F-4G Wild Weasel Squadron.

Dr. DeLauer is very interested in doing a demonstration to reengine the F-4, look at some new avionics and fuel tanks. He assures us that this is for an application for foreign military sales, and he has no intent to ask the U.S. Air Force to do that.

We don't have an interest in doing that to our F-4's today. He believes there may be a particular option for foreign military sales.

Senator KENNEDY. The question is whether we should be appropriating money to help with foreign military sales. That is the policy issue, I understand?

General RUSS. Yes. What he is asking us to do and we are still discussing is to help out in the near term until that request can come over formally.

He is looking to not start a major reengining program, but do a prototype demonstration on one aircraft.

Senator KENNEDY. Just to follow the Chairman's question; in your own personal opinion concerning modernization, you still have reservations as to whether that is really money wisely spent given other priorities?

General RUSS. Absolutely. That is not one of our priorities. We would not choose to do that.

Senator KENNEDY. Thank you.

General RUSS. Let us look at the average age of our force.

You can see that our force age is divided into two nodes. The newer part of the force composed of the F-16, F-15, A-10 and A-7 is generally below [deleted] years of age.

The older section is on the right side of the slide [slide deleted]. It is dominated by the F-4. That F-4 force will need to be replaced [deleted]. The average age of it right now is about [deleted] years. You can see that on this slide.

Currently we have a little over 1,200 F-4's in the force. By the end of the 1980's, 1989, 1990's the average age will be [deleted] years. That is about the time we will [deleted].

The only airplanes left in the F-4 force [deleted] will be later model F-4's. They will stay in the force for a while. It is important to note that this chart indicates average age. That means a lot of the airplanes will be [deleted].

I might say that we currently have problems with the F-4's. We have some restrictions on their use because of the fatigue we have found. We have found out we had some cracks in some of the major spars. It gets to be an old airplane. It has been around a long time.

The majority of these were made back in the 1960's in the Southeast Asia conflict.

Senator **Goldwater**. Your study is done not necessarily on the age of the aircraft, but can you place the time when you can expect metallurgical failures in the main spar? Have you reached that yet?

General **Russ**. It is very difficult to come up with a standard one because it depends on how the airplane is used, as you well know, whether it is primarily an air-to-air role or air-to-ground role.

We have forecast average age or lifetime on the F–4 and we upgrade that every time we find that we have an accident or we find something during a mod that indicates corrosion or cracks or something like that.

It is hard to pin down exactly, sir. We have assumed that [deleted] is about the best time. Historically that has been right. I think there are still a few years left in the F–4. I am not saying it is going to fall off the cliff tomorrow, but we think it will last until [deleted]. Much more than that, I doubt seriously.

Senator **Goldwater**. Are you planning any appreciable increase in the failure of main spars in the F–4?

General **Russ**. Yes. I was talking to General Creech a month ago. He showed me a main spar taken out of the F–4 that had a major crack in it.

He also indicated to me at that time they had better than 2,000 hours backlog on safety repairs for the F–4's.

He indicated also that there were a couple accidents last year in the Tactical Air Command due to the structural failure of the airplane.

So, how long can you shoe an old horse, I don't know, but it is an old horse and it served us well in Vietnam, but it is old.

Senator **Bingaman**. Mr. Chairman, could I ask, the previous chart showed that the bulk of the [deleted].

What are your plans in regard to those?

General **Russ**. The F–111 is an exception. I will show you more how that fits in. We believe the F–111 will last in the inventory [deleted]. It is a very specialized weapon. The airplane does not pull a lot of G's. It flies one mission which is low altitude, deep interdiction.

Structurally it is sound. We have not found any problems with that airplane. We expect it to last quite a while.

Senator **Goldwater**. In fact, there were quite a few years in there when they didn't fly them much.

General **Russ**. That is absolutely true. When you are only flying 5 or 6 hours a month on the airplane, it lasts a long time.

We had a lot of problems with the airplane, spares problems, reliability problems. I think we are over those now.

That was the average age of the F–4. Let us look at the total force. Total fighter force's average age is [deleted]. It will increase gradually to just under [deleted] years before it starts down again and stabilizes at about [deleted].

I might show you what the rest of the Soviet force looks like.

Fighter Modification and Improvement Programs

Aircraft require improvements throughout their useful life: to extend utility in the primary role; to exploit potential in a secondary role; and for reliability and maintainability.

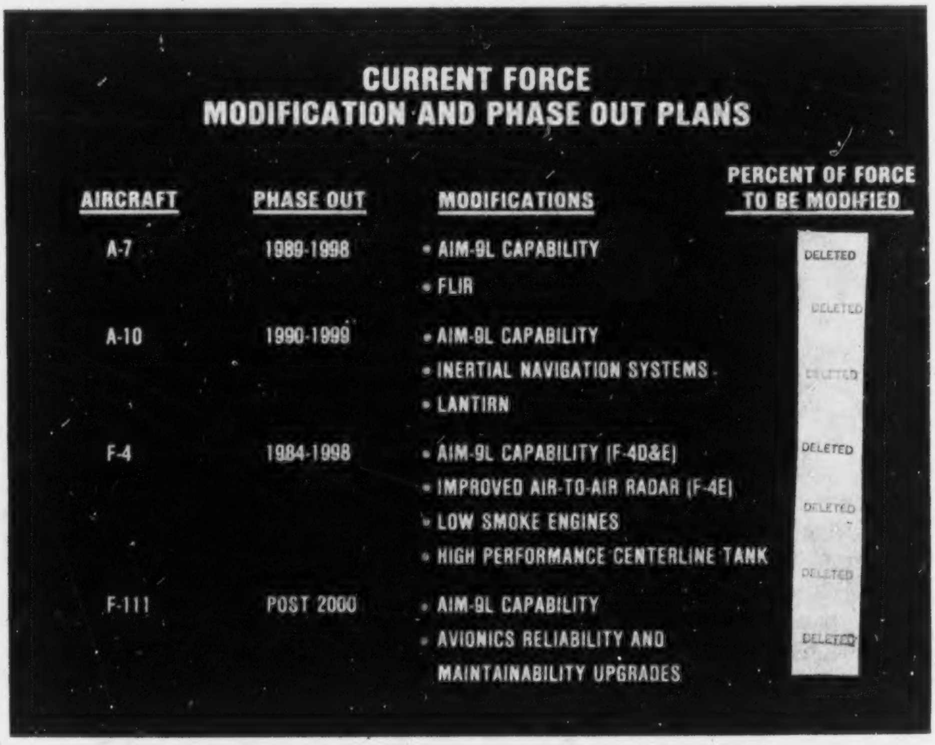
Modifications are not made within four years of aircraft phase out.

You can see that they continue to modernize to keep themselves a very young force. Now, throughout the life of an airplane we modify them. We modify them for two reasons.

One, to improve their capability so that the utility in the primary role and secondary role is continued or to increase the reliability and maintainability.

However, we do have a rule that we do not modify airplanes within 4 years of phase out.

Now, there are exceptions to that rule. Certainly safety modifications would be put in the airplane. If we had an ejection problem, we would fix that.



CURRENT FORCE
MODIFICATION AND PHASE OUT PLANS

AIRCRAFT	PHASE OUT	MODIFICATIONS	PERCENT OF FORCE TO BE MODIFIED
A-7	1989-1998	• AIM-9L CAPABILITY	DELETED
		• FLIR	DELETED
A-10	1990-1999	• AIM-9L CAPABILITY	
		• INERTIAL NAVIGATION SYSTEMS	DELETED
		• LANTIRN	
F-4	1984-1998	• AIM-9L CAPABILITY (F-4D&E)	DELETED
		• IMPROVED AIR-TO-AIR RADAR (F-4E)	
		• LOW SMOKE ENGINES	DELETED
		• HIGH PERFORMANCE CENTERLINE TANK	DELETED
F-111	POST 2000	• AIM-9L CAPABILITY	
		• AVIONICS RELIABILITY AND MAINTAINABILITY UPGRADES	DELETED

Now, this chart shows our current force, modification in the phaseout plan. It shows those airplanes that are no longer in production; namely, the A-7, A-10, F-4 and the F-111.

It shows the major modifications throughout the timeframe that we plan on putting into these airplanes. You will notice in each of the airplanes the AIM-9L capability. This provides for the latest air-to-air missiles for self-defense purposes.

The A-7 will also receive a forward looking infrared to provide some night capability in [deleted] of the force.

A-10 inertial navigation system in [deleted] the force. The other [deleted] force received that modification when it went through the line or I should say when it was in production.

Lantirn goes on [deleted] the force. In the F-4's we are improving air-to-air radar [deleted]. That is just about complete. It should be completed in another month or so.

What we are doing there is insuring that the missiles that are currently on the F-15, the AIM-7F, can be used on the F-4's. So, as the new missiles, Amraams, come into the force, we will ship the lesser capable AIM-7 missiles down to the F-4 force.

We are designing and building a high performance centerline tank which will allow the aircraft to carry that tank through the entire envelope.

Finally, in the F-111 we have one major program ongoing which is to improve the reliability and maintainability of the avionics. This is not a capability improvement. It is an improvement for reliability and maintainability.

Currently the avionics in the F-111 has a mean time between failures of about 5 hours. This modification will upgrade that and give it mean time between failures of 19½ to 20 hours.

Senator GOLDWATER. Is that mostly on radar?

General RUSS. Sir, there are six major parts of the avionics: Radar, terrain-following radar, navigational system—some of the F-111's still have vacuum tube technology and some of them are analog and some of them are digital.

This program will not only modernize the tactical ones, it will also modernize the FB-111's.

Senator GOLDWATER. That has been a problem even back during Vietnam. You were actually getting 4 to 5 hours mean time between failures on radars at the same time radars in civilian aircraft were getting over 25 to 30 hours of service.

Did you ever find out if the G forces had any effect on the mechanical operation of the radar?

General RUSS. I think that for a similar type of radar that the civilian aircraft have like a weather radar, we received the same sort of mean time between failures on those radars, for the ones we have on our T-39 and the ones we have in our cargo airplanes.

It is the fighter radars that are sophisticated and that have the longer range and higher power, that has experienced the failures. We have learned a lot about that. We have learned more about cooling and we are better able to maintain those radars.

Now, we have significantly improved the reliability rate of the radar.

Senator GOLDWATER. Where did you have T-39's with radar?

General RUSS. We have a few out at Andrews, sir.

Senator GOLDWATER. You must have them hidden.

AIR FORCE TACTICAL FIGHTER ROADMAP FUTURE FORCE

A procurement strategy to meet the threat must provide:

The required numbers of fighters to flesh out, modernize and sustain a 40 TFW force and our air defense force.

The needed mix of fighters to accomplish specialized and multi-role missions.

The quality improvements for fighters to do the demanding missions.

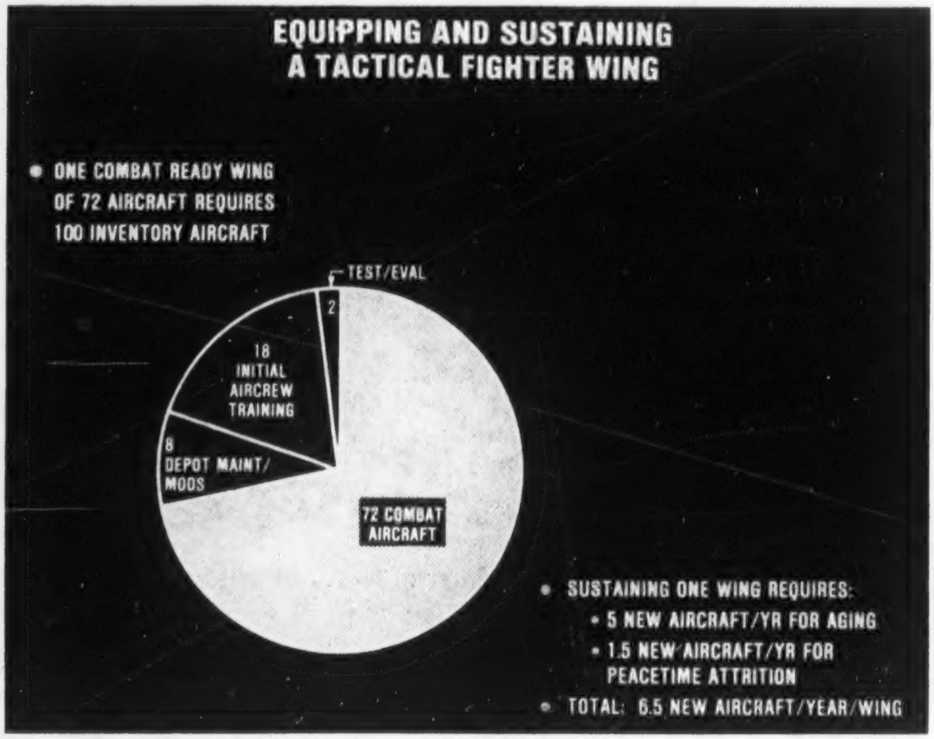
General Russ. The second part of the briefing covers the future force of the roadmap. It is based on three principal characteristics.

First, we need to procure the proper numbers of fighters to flesh out, to modernize and sustain a 40 tactical wing force and Air Defense Forces. We need to assure that we have the proper mix of fighters, those that can accomplish the specialized missions and those that can do multirole missions, and we need to insure we have certain quality improvements for the fighters that do the more demanding missions.

Now, we talk about 40 tactical fighter wings and why. Actually 40 tactical fighter wings are not enough. We believe within the current fiscal climate and other priorities, it is probably a prudent level to seek.

I mentioned what the Soviets had in the first part of the briefing. Let me say that the JCS states that the requirement is [deleted] to carry out the national military strategy.

Our planning goal and approved force level is [deleted] wings. Today I would like to talk about 40 wings.



EQUIPPING AND SUSTAINING
A TACTICAL FIGHTER WING

- ONE COMBAT READY WING OF 72 AIRCRAFT REQUIRES 100 INVENTORY AIRCRAFT

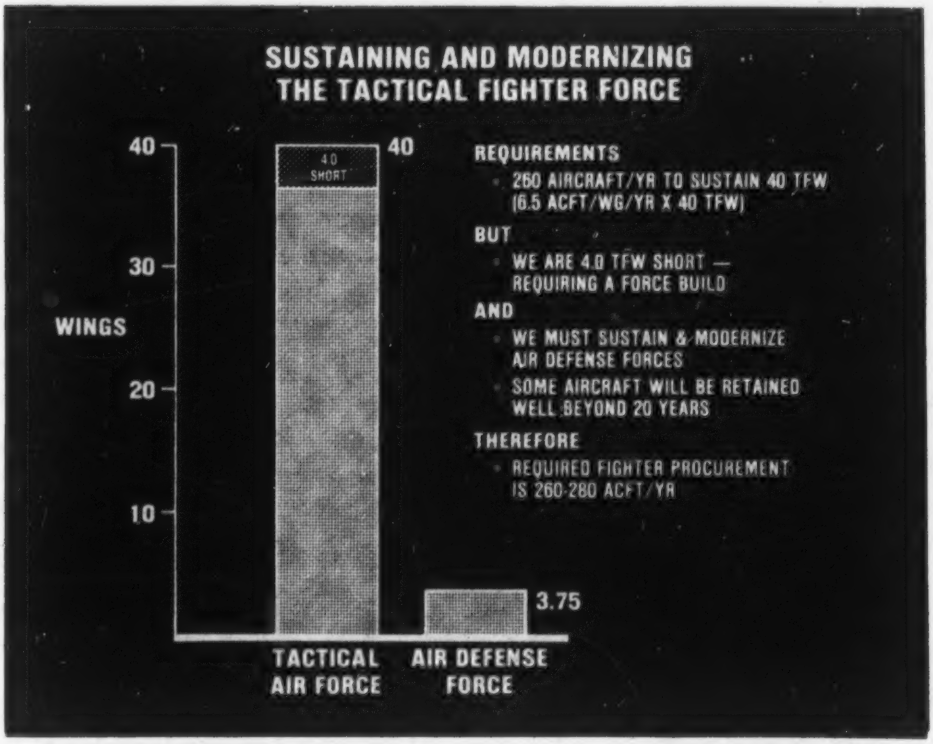
- SUSTAINING ONE WING REQUIRES:
  - 5 NEW AIRCRAFT/YR FOR AGING
  - 1.5 NEW AIRCRAFT/YR FOR PEACETIME ATTRITION
- TOTAL: 6.5 NEW AIRCRAFT/YEAR/WING

As you know, we currently only have 36 wings. Now, speaking of numbers, let me show you on this chart how many fighters you need for a fighter wing.

This says for every combat wing in the Air Force of 72 combat airplanes, we need 100 airplanes in the inventory. That means we have 72 at all times ready to fight and we have 28 in the other areas that support that; some in maintenance, some in combat air crew training and some in evaluation.

If a fighter stays in the inventory for 20 years, then you must replace one-twentieth of the inventory every year. So, for every wing we require to replace, one-twentieth of 100 or 5 new aircraft per year for aging.

We also require one and a half new airplanes per year for peacetime attrition. If you add those two together, you come up with 6½ aircraft per year per wing. If you multiply 6½ times 40, you find we need 260 airplanes per year to sustain a 40 wing tactical fighter force.



SUSTAINING AND MODERNIZING THE TACTICAL FIGHTER FORCE

REQUIREMENTS
- 260 AIRCRAFT/YR TO SUSTAIN 40 TFW (6.5 ACFT/WG/YR X 40 TFW)

BUT
- WE ARE 4.0 TFW SHORT — REQUIRING A FORCE BUILD

AND
- WE MUST SUSTAIN & MODERNIZE AIR DEFENSE FORCES
- SOME AIRCRAFT WILL BE RETAINED WELL BEYOND 20 YEARS

THEREFORE
- REQUIRED FIGHTER PROCUREMENT IS 260-280 ACFT/YR

However, we are four wings short of that and, therefore, we need a few airplanes per wing to build to that 40 tactical fighter wing force.

What we have done in our roadmap is set our sights and our plans to build to that level by 1989 or over a 5-year period.

In addition, we must sustain and modernize our air defense forces. We have the equivalent of 3.75 wings of air defense forces. However, some of our aircraft will be [deleted]. Therefore, that counterbalances somewhat the number of airplanes you need.

When you throw these together and add and subtract, we find we need 260 to 280 airplanes per year to flesh out, modernize and sustain a 40 tactical air fighter wing force and air defense force.

Senator Goldwater. How many tactical aircraft have we been averaging in purchasing a year?

General RUSS. This year we are asking for 198.

Last year we had 180.

We have been around 150 to 200 the last 2 years before that.

Before that we had significant numbers of fighters, back in the sixties we were——

Dr. COOPER. Why don't you put that slide back up.

[Slide deleted].

General RUSS. Give me the average age of the fighters.

Senator GOLDWATER. I mention this because I think this is a very important point. We have not been procuring new aircraft in the same number as the attrition.

General RUSS. Absolutely. We are not procuring enough aircraft to take into account the attrition due to aging and crashes. We are not asking for enough this year to do that, but we hope to build tc that.

Senator KENNEDY. What is your own view about the implications of increased cost in terms of the moderization, for example, of the F-15?

It seems to me you are going to be put under more budgetary pressure, these are the factors that will cut into the request in terms of numbers we can afford versus what is needed in the area of tactical air.

General RUSS. I don't think so, Senator Kennedy. The reason I don't is because if you assume that you have to buy between 260 and 280 airplanes a year, which we believe we do, to maintain at least that 40-wing force, then there are only 2 airplanes out there to buy, one is the F-16 and the other is F-15.

What we have done is continue to buy those airplanes throughout the next 8 to 10 years. If you buy the F-15E, which is the dual role fighter that the Air Force chose, it is significantly less costly (additional cost), to buy that than it is to buy the F-16E.

Assuming you are going to buy 260 airplanes a year, then the price tag on that is less than modifying the F-16.

Senator KENNEDY. What will be the increase in terms of percentage of cost of the F-15?

General RUSS. The basic F-15 and I have some charts later on, is about $8 million more than an F-16 off the line.

Senator KENNEDY. In terms of the modernizations and alterations of the F-15 that you are talking about?

General RUSS. If you modify the F-15, it adds $1.3 million per copy in flyaway cost. If you do the same thing to the F-16, it is about 3.7. It depends on what side of the argument you are trying to get on. If you are trying to provide the cost of an F-15 versus the F-16, you will always come out the F-16 is cheaper overall if that is what you bought. You must put it in context of the total number of airplanes that you are buying. You can see in this period here when we bought very few airplanes. These are actually deliveries so it doesn't track exactly the procurement year.

I will provide for you, sir, for the record, a list of the number of fighters we have procured in the last 10 years. I think that is a valuable chart.

[The information follows:]

PROCUREMENT TOTALS

	A-7D	A-7K	A-10A	F-5E	F-5F	F-15	F-16
Fiscal year:							
1975	24	0	22	69	0	72	0
1976	0	0	53	0	0	108	0
197T	0	0	20	0	0	24	0
1977	0	0	100	0	0	108	0
1978	0	0	144	0	0	97	105
1979	0	12	144	0	0	78	145
1980	0	12	144	0	0	60	175
1981	0	6	60	0	0	42	180
1982	0	0	20	0	3	36	120
1983	0	0	0	0	3	39	120
1984	0	0	0	0	0	36	144
Total 10 year (FY 1975-84)	24	30	707	69	6	700	989

Now, while we are talking about numbers, also important is the capability of those airplanes. Therefore, we must have the proper mix of specialized and multipurpose aircraft that will meet the CINC air-to-air and air-to-ground requirements.

The example I will show you shows that the requirements vary by the theater, they vary by time, they vary by the enemy situation, and they vary by capability that the enemy have.

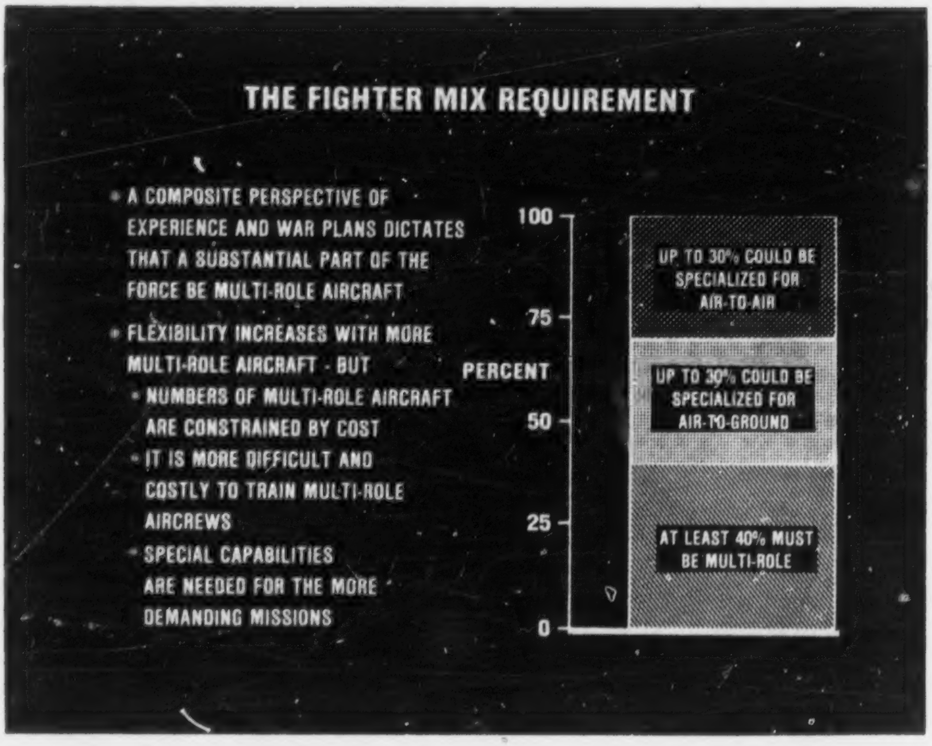
In Europe [deleted] of the airplanes would be initially for the air-ground role.

As the war continues, that percentage [deleted].

On the other hand, in Korea during the initial part of the war [deleted].

What that says is that some part of the force has to be able to do both of those roles.

The question becomes how much of that force needs to have that dual capability.



THE FIGHTER MIX REQUIREMENT

- A COMPOSITE PERSPECTIVE OF EXPERIENCE AND WAR PLANS DICTATES THAT A SUBSTANTIAL PART OF THE FORCE BE MULTI-ROLE AIRCRAFT
- FLEXIBILITY INCREASES WITH MORE MULTI-ROLE AIRCRAFT - BUT
  - NUMBERS OF MULTI-ROLE AIRCRAFT ARE CONSTRAINED BY COST
  - IT IS MORE DIFFICULT AND COSTLY TO TRAIN MULTI-ROLE AIRCREWS
  - SPECIAL CAPABILITIES ARE NEEDED FOR THE MORE DEMANDING MISSIONS

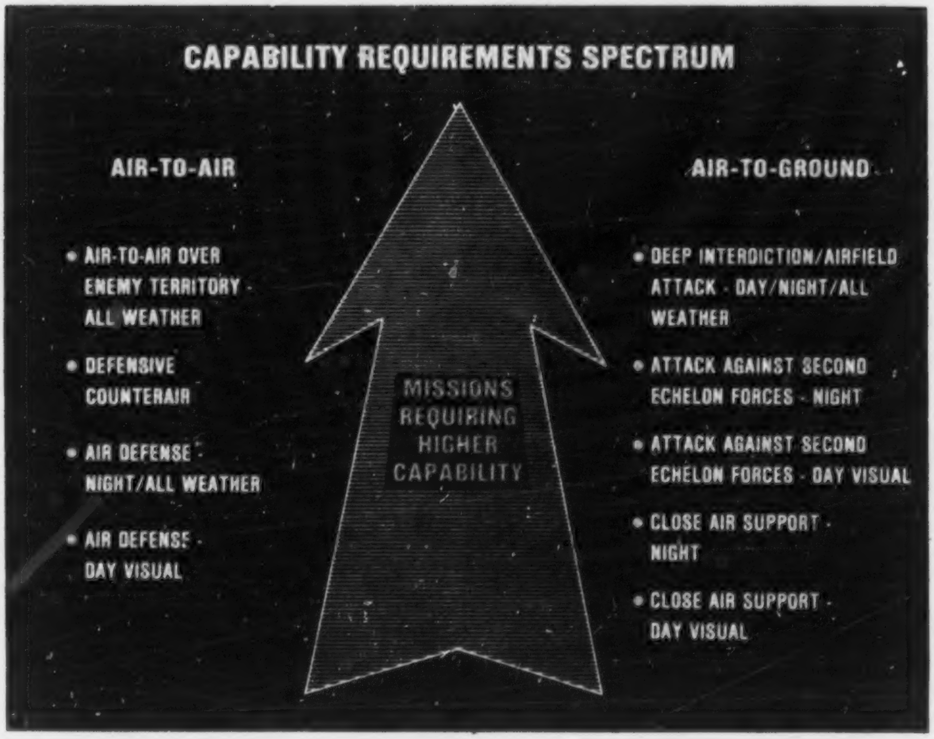
100
75
PERCENT
50
25
0
UP TO 30% COULD BE SPECIALIZED FOR AIR-TO-AIR
UP TO 30% COULD BE SPECIALIZED FOR AIR-TO-GROUND
AT LEAST 40% MUST BE MULTI-ROLE

So, we took a composite perspective of our experience and our war plans, and we came up with this.

Thirty percent of our force could be for air to air, 30 percent for air to ground, but bottom line at least 40 percent had to be multirole.

Then we asked ourselves if multirole is good, why not all multirole? The answer is one, it is generally more costly to buy multirole than single role. It is more difficult to train those air crews because you require more training time, it is more difficult, it is more costly, and then we need some airplanes with special capability to do the demanding missions.

That leads to the third point. On the demanding missions we have to have a variety of capabilities in our force.



CAPABILITY REQUIREMENTS SPECTRUM

AIR-TO-AIR

- AIR-TO-AIR OVER ENEMY TERRITORY - ALL WEATHER
- DEFENSIVE COUNTERAIR
- AIR DEFENSE - NIGHT/ALL WEATHER
- AIR DEFENSE - DAY VISUAL

MISSIONS REQUIRING HIGHER CAPABILITY

AIR-TO-GROUND

- DEEP INTERDICTION/AIRFIELD ATTACK - DAY/NIGHT/ALL WEATHER
- ATTACK AGAINST SECOND ECHELON FORCES - NIGHT
- ATTACK AGAINST SECOND ECHELON FORCES - DAY VISUAL
- CLOSE AIR SUPPORT - NIGHT
- CLOSE AIR SUPPORT - DAY VISUAL

This shows the capability-requirements spectrum. What it says, in the air-to-air role, the easiest role to do is air defense/day visual. The more difficult is air-to-air night, all weather.

If you look at what our capability is in 1984, you will see we have [deleted] that do the air-to-air role. In 1993 we hope to increase that by [deleted] composed of these types of airplanes here.

The main reason we get that extra capability is because we added the F-16 in there. The reason we can add the F-16 in there is because we have given it an AMRAAM capability for missions that will fire beyond visual range and at night and in all weather.

[Slide deleted.]

This shows the benefit of the AMRAAM over the AIM-7. When a F-15 fighter fires an AIM-7 at an enemy fighter, he must continually illuminate or provide guidance to that missile from the fire control system of the fighter.

Therefore, he [deleted].

He must also continue to fly a path along behind the missile which brings him into closer contact with the enemy and also within the lethal zone of the enemy's missile.

Now, with the AMRAAM, the F-15 pilot can launch the AMRAAM because it has an active radar seeker, he can turn and get out of the way. We have what we call launch and leave capability. Since the active radar seeker is on the missile, he can lock on another fighter, another missile can lock on another one, and he can have multiple kills on one pass.

That is why AMRAAM is important to our air-to-air capability.

A similar sort of rationale goes to air-to-ground. Simplist is close to air support/day visual. Most difficult is deep interdiction, all weather and night. Today we have three wings of F-111 to do this night attack and deep interdiction.

That is all we have in the entire U.S. Air Force. By 1993 with the introduction of the dual-role fighter, we will increase that to [deleted] for the deep interdiction part of it any by introduction of the dual-role fighter and Lantirn on the F-16 and A-10, we will increase that three wings to [deleted].

LOW ALTITUDE NAVIGATION AND TARGETING INFRARED FOR NIGHT (LANTIRN)

Capabilities: terrain avoidance, navigation and attack under weather at night; improved visual target acquisition and identification; IR maverick cueing; night unguided weapons delivery with day-visual accuracy; and laser designator for precision bombing.

Aircraft—pods: F-16C—200; A-10—100; and dual role fighter—420.

The primary addition, then, to give us this night attack capability is the Lantirn. The Lantirn will allow us to navigate to a target, find the target and attack the target at night with day visual accuracy.

It will also do something else which is very imporant. It will provide our single seat airplane with laser designation capability.

Currently, we have no capability to designate targets and to drop laser bombs with our single seat airplane.

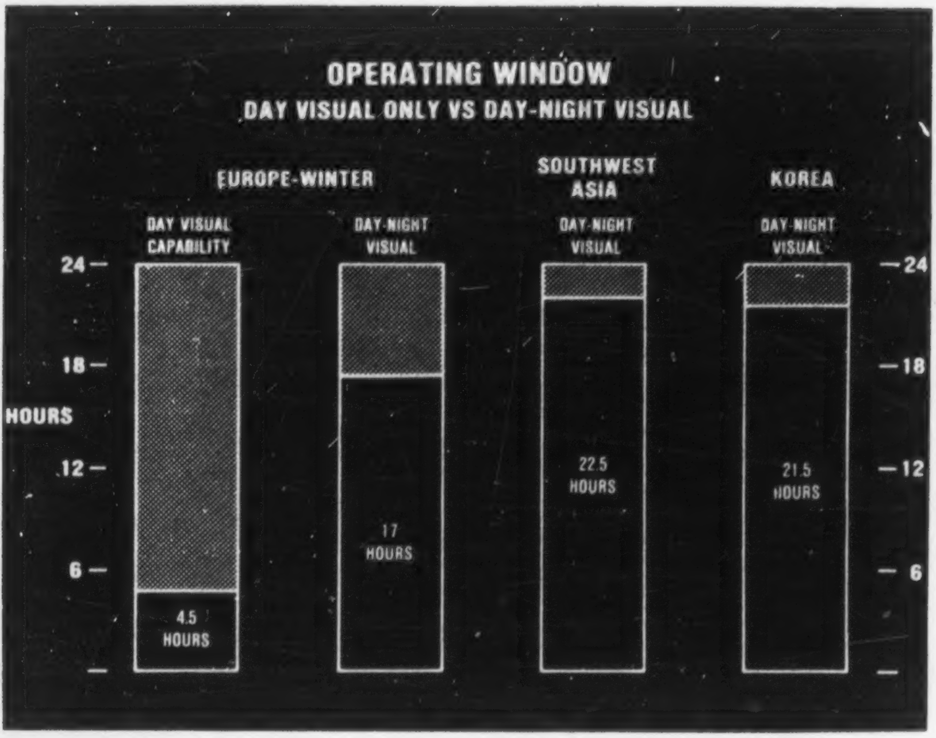
As the F-4's phase out of the fleet, our laser capability also phases out of the fleet. Current plans call for a buy of 720 of those pods, 200 for the F-16, 100 for the A-10 and 420 for dual-role fighters.

Some of these are for supply.

Senator KENNEDY. Are you going to talk later about the Lantirn program?

General RUSS. Yes, sir.

Why is it so important to have that night capability?



Well, it increases our operating window. As an example, in the European area in winter if you only have a day visual capability such as the F-16 today, we can only operate 4½ hours a day on average.

That means 19½ hours a day the enemy does not have to worry about our air attacks.

Now, if you give that force the night capability, you open his window to 17 hours a day and you more than double the number of sorties we can fly.

That same sort of capability is evident in the Southwest Asia theater and Korean theater if you give your force a night capability.

Now, while night is important to do the long-range mission, the interdiction mission also requires a long-range force. Let me explain that chart.

This is a percentage scale on the left-hand side. This 100 percent represents the total number of targets that the CINC in Europe would like struck sometime during the first few days of the war.

What it says is if I station a fighter at Hahn Air Base, the F-4E, he can cover about [deleted] percent of those targets. If I had an F-16C, he could cover slightly more or about [deleted] percent of those targets.

Only the dual-role fighter or the F-111F can cover [deleted] of those targets. I should say range out to [deleted] of those targets because, although the F-111 will cover those targets because of the limited numbers of them, he can only strike [deleted] percent of the targets.

Senator **Bingaman**. That is because of the limited number of F-111's?

General **Russ**. Yes. We have only three wings of them.

Senator **Bingaman**. Why don't we build more F-111's?

General **Russ**. The line closed, sir. It is cheaper to modify an airplane you have in the inventory than it is to go ahead and open up the line and build a new one.

[Slide deleted.]

Let me show you a little bit about those targets. You will see this line on several of my charts. What it represents is [deleted] from the political border.

Also what it represents is that is the area that our current force of F-4's and F-16's operate in. They do not operate in this portion. They do not have enough range to do that.

[Deleted.]

However, in this area you can see the vast number of bases and fighters and the majority of them are not sheltered. So, they are lucrative for attack from air. If you look at other targets that the CINC wants struck, you will see the bridges, railroad yards, command and control sites and storage area beyond the [deleted] area that he wants struck and he thinks are critical to the first part of the war effort, not counting all the thousands of mobile targets that are back there that influence the forward part of the area.

[Slide deleted.]

So, when you put that in context, you can see here that flying out of Germany with our F-4's and our F-16's, this amount of the area can be covered which means that there are some [deleted].

That is why we need the dual-role fighter.

A similar sort of analysis when we look at Southwest Asia. Flying from [deleted] you can see the F-4, F-16 simply don't get to the target. Dual-role fighters and F-111's are required.

[Deleted.]

Senator **Kennedy**. How do you balance the mobility of those deeper interdiction targets? What can you tell us about what you think is going to be the projection over the period of the next few years in terms of what we are able to strike in terms of other kinds of weapon systems?

General **Russ**. Sir, we had a variety of weapons that go on the F-15 or will go on our F-15E to include precision type weapon and various degrees of stand-off weapons.

We have precision guided weapons that give us [deleted] accurancy and we can stand off from terminal threat, as an example, GBU-15 type of weapons which is a 2,000-pound glide bomb. [Deleted].

So, we can stand off from the terminal threat. We have some $16 billion currently in forces designed specifically to disrupt that portion of the Soviet air defense system and ground-to-air system.

By that I mean we have the ECM system like the EF-111, we have systems that identify all of their various targets. We have Compass Call which is a jamming system that jams all their communications links. We have lethal systems such as F-4G which is primarily dedicated to kill SAMS.

All of that effort is to knock out the air defenses in the forward area to follow the F-111 and F-15 to penetrate through those areas and attack the targets.

The other thing that I think is important is these penetrating aircraft will penetrate at night and low altitude. When you do that a significant portion of his defense is no longer useful. EO and IR, as an example, need some sort of guidance, some sort of radar to point that toward the airplane. At night they don't have that.

Also by flying at 200 feet, you tend to mask out a lot of their radars. Some of the radars they can see you with there is no doubt about it, but not all.

All I can say is it makes your problem easier at night than it is during the day.

[Slide deleted.]

Here are the targets in Southwest Asia theater [deleted].

Let me sum up the strategy before I show you what our buy pattern is like. We intend to buy 260 to 280 fighters per year. We must insure at least 40 percent of the force are in the multirole. We must insure we have certain quality improvements to meet the more demanding missions.

[Slide deleted.]

Let me use this chart to build up the number of airplanes and the types and models that we plan on securing between now and 1994.

Dr. COOPER. This is the key chart that summarizes it all here.

General RUSS. First, we are requesting 48 F-15's of the C and D model. In 1987 we have selected the F-15E as the dual-role fighter and procurement starts in 1986.

We will level that procurement at [deleted] throughout the time frame, the last procurement being in [deleted]. At that time the F-15 line is closed.

The F-16 force, we will buy 150 F-16C and D in 1985. We will increase that to 216 in 1986. We would maintain that 216 level for 3 years.

However, throughout the time frame we will continue to buy F-16C's and D's primarily because it is a very, very capable airplane and we need to keep that sort of airplanes in our force.

However, we modified the F-16As and B's to make C's and D's out of them as the new technology comes along.

We certainly will do the same thing. We will modify the F-16C and D and we expect that out in this time frame these C's and D's will then become, a portion of them at least, the F model. That is in [deleted] and will enter the force about [deleted].

F-16 FOLLOW-ON OPTIONS

Representative technologies that may be applied to the F-16: advanced avionics integration; fire/flight control innovations (AFTI); dorsal fairing for expanded avionics volume; new wing designs for extended range/weapons payload; and increased thrust engine.

What does the F-16F look like? We do know it will be a single seat airplane and primarily air-to-ground airplane.

Here are some of the representative technologies that could be applied to the F-16. We are doing a lot of work in advanced avionics now. We also are working on flight control innovations that you are aware of out at Edwards where the fighter airplane can actually move sideways through various types of thrusts.

The Israelis are looking for a dorsal fairing which is nothing more than a cap that goes along the back part of the airplane to give increased avionics space.

We have done some testing on the XL, the crank arrow wing and we will be looking at that as a possible modification of the F-16.

If we do all of those things or some of those things we may need increased thrust so we preserve options for an increased thrust engine. That is a list of things that may go into the airplane.

The other part of the roadmap or the final part is introduction of the new air-to-air fighter and it would be initially procured in 1993 and will enter the force in 1995. That air-to-air fighter would be a revolutionary change in our fighters.

ADVANCED TACTICAL FIGHTER

New fighter design with air-to-air combat performance to meet the projected threat: efficient supersonic performance; low signatures; high maneuverability; advanced integrated avionics/armament; long range; short takeoff and landing; sustainability/supportability; and inherent air-to-surface capabilities.

We look at these sorts of things to go into that airplane, first, efficient supersonic performance. We hope the airplane will have improved survivability at supersonic speed [deleted].

It will be highly maneuverable [deleted] such as F-15 and F-16 are today. It will have advanced avionics. It will have long range to take the fight to the enemy. It will have short takeoff and landing capability so that they will be able to operate out of damaged runways and short fields.

And probably very, very important is the sustainability and supportability. We are giving equal weight to sustainability and supportability as we are to performance.

Last, but not least, we will design into the airplane such things as hard points in the wing structure so that in the future, 2010 or 2020 we could allow the airplane to go to the air-to-ground role, should that be required.

Senator GOLDWATER. Do you envision something along the lines of that new Grumman experimental, the Rockwell experimental? Or do you go beyond that?

General RUSS. Sir, the X-29 that Grumman is building is going to prove out a lot of the technology or some of the technologies that will be introduced.

The main thing that airplane has is a forward swept wing. As you know, we don't have any fighters with forward swept wings, but a forward swept wing does provide you with a couple of benefits. One benefit will allow you to land at slower speed.

Also, it gives you better transonic speed maneuverability. That airplane itself probably wouldn't be the advanced tactical fighter [ATF], but some of the technologies that are being proven in that airplane could very well go on the ATF.

Senator GOLDWATER. Let me ask you one more question.

Is it the view in the tactical forces that a mach 2 is as important as we thought it was a few years ago?

In other words, are we looking at these advanced fighters for more than mach 2 or mach 2 plus?

Are we talking about, like we used to, mach 4, mach 5 or is that important any more?

General Russ. I think our thought is that it is nice to have a dash capability to get to mach 2 if you have to get a target at 60,000 to 70,000 feet. But you pay a penalty for that extra speed. Probably it is not worth the penalty you pay to make your airplane do that, at least not all your fighters.

You need some of your fighters to be able to do that. Rather than have your entire force mach 2 fighters, we believe some of them need to be of that speed, but by and large, a great many of them can be less than that.

I think our ATF will be in the mach 1.5 range. I think it will have a dash speed to mach 2. You know as well as I that once you get above 1.6 mach, you start paying penalties because the heat buildup on the airplane requires certain types of structures, requires certain types of fluid. It becomes doubtful that you want to pay that penalty in all of your force.

Senator GOLDWATER. Thinking of the future, we needn't put so much importance on higher thrust engines, but improve the thrust we have now.

General Russ. I would like to see us simplify our engines. Where we are going on future engines is to reduce the number of parts.

Our program in engines would reduce the part counts in the engine 50 percent in the next 10 years, make them very durable, make them very reliable and make them consume less fuel and still get the high thrust to weight ratio.

I think we can do all of that in our next fighter. I am very enthused about the capability of our engine.

Senator KENNEDY. General, could I ask a question on that previous chart concerning, purchases in the outyears?

Can you give us some idea of what the additional cost is for the F-15's as we go from the C and D to the E's?

General Russ. The additional cost——

Senator KENNEDY. The total cost. What I am getting at is what the cost would be if the F-16 had the dual capability, compared with the cost of the F-15 dual role fighter.

General Russ. Could I beg you to wait for a minute. General Monahan has five charts to discuss that exact subject.

Dr. COOPER. A point on the engine. Senator Goldwater, you asked about increased thrust.

The other point we need to make about that engine is that we just let two advanced development concepts contracts for the next generation engine. We are looking at engines that will run about 30,000 pounds thrust, but we are looking at vectored thrust, two-dimensional nozzles, that we hopefully can get, not in the vertical takeoff and landing, but short takeoff and landing.

That is one of the long poles in the tent that we are looking at right now. That would be key in terms of operating from damaged runways.

ENGINE ROADMAP

Near term—improved reliability and maintainability: F-100-PW-220 and/or F-110-GE-100 for F-15C/D, F-16C/D and dual role fighter.

Mid term—complete for higher thrust version of both engines: provide for follow-on F-16; and extend F-15 capability to meet threat.

Long term—develop advanced technology engine for ATF.

General RUSS. That leads to the engine road map which is just on this slide. We have addressed the near term, mid-term and long term. We just completed this competition between Pratt & Whitney's F-100 and General Electric's 110.

The primary emphasis in that competition was on reliability and maintainability. We will have a few slides on that later. That is for the near term.

We would continue to work those engines. In the mid-term should higher thrust be required, we preserve the option. It can be for a higher thrust version of both slides either for the F-15 or F-16.

For the long term, for our advanced technology fighter, again we are talking about a competition for a new engine. To look at the things that Dr. Cooper just mentioned, let me put that all together for you, if I may.

Dr. COOPER. Before you leave that, could we put the road map up again.

General RUSS. [Deleted.]

What does that look like. You can see our force in what I call my squeeze chart.

From 1984 to 1993 we will have the 40 tactical fighter wings, we will have [deleted] and we will have specialized capability.

You can see the number of F-15's stay fairly stable and you can see the vast number of F-16's that come into the budget.

[Chart deleted.]

This is one more picture of that stack chart we call it. I have superimposed on this some numbers on the top. Those numbers are what currently are in the 1984 budget and the FYDP.

What I am telling you is that our plan is less than what is in the current budget and what is in the current 5-year defense plan.

It is less than 400-some airplanes and it is less by $13 billion. These, of course, were different mixes when we bought these numbers of airplanes.

Senator KENNEDY. That represents how many wings?

General RUSS. That represents a fully sustained modernized 40 tactical fighter wing force with average life of about 10 years.

Senator KENNEDY. What do the other numbers represent, the $13 billion difference between what you are talking about and what the Air Force—one is 40 wings and the other represents what?

General RUSS. Forty-four wings. When we came over last year we talked about 44 wings. We decided that that probably was not affordable and we went to a 40 tactical fighter wing.

I must say that the current budget that is over on the Hill has to be amended because we have moneys in some pots that shouldn't be there and need some in other pots.

So, we will be coming over with a modification to the budget as a result of the dual-role fighter decision and as a result of the engine competition, moneys have to be shifted.

We will make that available to you as soon as we can. I hope to be able to get it out in the next week.

Dr. COOPER. I would like to make a point on that slide. That is a fairly simple chart, but as you study it, there are a number of points you can take away.

One point is in terms of fleshing out the force, and Senator Goldwater, in reviewing the testimony last year, you had a rather lenghty discussion with General Skantze about the fact we are not procuring enough tactical fighters.

I think if you will look at that, you will see that the aircraft we are going to use to flesh out, in essence, modernize the bulk of our force, is the F-16.

You will notice we get our production rate up from 150 this year to 216 next year and will sustain that.

Senator KENNEDY. On that point, what does that additional request cost?

Dr. COOPER. I don't have that off the top of my head, but we can get that for you for the record.

[The information follows:]

ADDITIONAL REQUEST COST

The cost of the additional 66 aircraft in fiscal year 1986 to increase procurement from 150 to 216 is $1.040B ($15.75M each) plus approximately $200M for peculiar support. As a result of rate benefits, the unit cost of these aircraft is estimated to be approximately $290,000 less than the unit flyaway cost for 150 aircraft buy in fiscal year 1986.

The point that General Russ makes is that we budgeted for that. That is in the budget.

The second point is that we do need an increase in capability. This goes back to the mix in our force. We propose to do that in the near term with the F-15E for that very demanding deep interdiction mission, multirole, to take care of that mission in between the F-4 and the F-111.

We are looking at four wings. That is extracting capability out of the current generation of fighters, both the F-15, and F-16 C and D to be followed by the F-16F.

Our future is out here with the ATF. If history tells us anything, we will be lucky if we will be able to hold this where it is in 1993. It certainly won't come any sooner.

I look at this from resource management points of view. It is an intelligent way to manage our resources. We are attempting to glean as much capability as we can out of the fighters we have in production.

Senator Bingaman asked why not the F-111. I might say if we still had the F-111 in production, we might look at that, but it would be very costly to resurrect that program.

General RUSS. Another thing we had to keep in mind was the idea that we need to keep two production lines going in the United States of firstline fighters. You can see we keep two production lines going between General Dynamics and McDonnell Douglas all the way through this time. Mac Air getting the small portion down here and General Dynamics getting this section until we bring in the ATF.

Senator KENNEDY. I note in your prepared statement with regard to budget priorities, modernization and expanded theater forces come last in your list of priorities.

I know you would like to get all the priorities. Obviously there will be pressure to try and find some budget reduction.

The committee members are going to try to find where your priorities are and reduce resources in areas that are lower priorities. I think you have made a strong case in this area, very reasonable and well thought out one, but in terms of your total list of priorities, if you get them all, fine, but if people say, well, this is the fifth priority modernization to expand our forces, as you point out on page 3 of your document and you are going to be needing additional, whatever it is, I guess it is $30 million per plane and 80 planes, it gets up to $2.4 billion.

General RUSS. Let me say that those priorities that we lay out do not mean that if we cut something automatically, the bottom falls off.

Senator KENNEDY. Usually that is what it means.

General RUSS. It means we do that in a balanced way. We say that strategic forces have our first priority. Our people actually have our first priority. But strategic forces have our first priority after people.

Therefore, when we got down to our tactical forces, we did just that. We cut from 44 wings down to 40 wings in the force. When we are down here at these low production rates, we are paying a penalty because we are buying those airplanes at less than optimum production rates.

If we can get them up to the sustaining level, then we can buy more airplanes.

Senator KENNEDY. I am just expressing a personal view. I think you make a very strong case and a very intelligent one, one that I think I would support. I just think in terms of your own priorities, maybe your priorities are listed there, you would like them all generally with priorities, you point out the things that are the most important.

There will be pressure for some reduction. I think you make a strong case and an effective one in terms of the flow line in terms of future years.

I think there will be pressure within the Congress for some reduction. I think this is an area which does need support. Effort will be made in the Congress to find out where the pinch is going to be.

Dr. COOPER. The point we need to make is each year when we go through the budget and we are in the process right now of constructing the budget of 1986, as you go through that, money is taken out as you go along the way.

The point we would stress is that if cuts are made, they need to be done in a balanced way throughout the priorities.

As General Russ said, we wouldn't just lop off tactical force modernization, we would take a little here and take some spares money that would go along to support that.

A couple of these people might disappear. We have already done that in one iteration in going from 44 down to 40 tactical wings, but your point is well taken.

Senator WILSON. Mr. Chairman, looking at the slide, I don't see anything going out through fiscal 1994 that indicates any aggressor aircraft acquisition.

General Russ. This is our tactical fighter force. The aggessor aircraft do not fall within this 40 tactical wing force.

They are trainer airplanes that augment or train these forces. We have, as you probably know, F-5's in the force at the current time. We do not have any money, at least in the near term, to replace those airplanes. It wouldn't be in this.

Senator Wilson. Is the F-5 for simulation of the Mig-23 or Mig-21?

General Russ. It is not as good a simulator of the Mig-23 as we would like. It is a very good simulator for the Mig-21, but not for the more advanced fighters.

Senator Wilson. That is what you are likely going to face in the unhappy contingency of combat.

General Russ. That is true. We are planning to modify F-5's. We will put radar in the F-5 that will give it the type of radar that the Mig-23 has. We will also modify it to give it the capability to receive radar, radar warning receivers. We will upgrade it at modest cost. To replace the aircraft as far as we were concerned, when we put the budget in, there was not sufficient, high enough priority to change any of these or other programs.

Senator Wilson. If there were funding, what aircraft would you like to see as an aggressor?

General Russ. There is a variety of airplanes that probably could be used. The Navy is running a competition right now to replace their aggressor airplanes. I understand there are four or five different competitors. I don't know exactly who they are, Senator.

Certainly the F-20 would be a very viable contender for that role.

Senator Wilson. This is a little outside your gambit, I suppose. Are you concerned as well with compatability in terms of operations with the allies?

I am looking at the foreign military assistance aspect. With respect to the F-20's, I am told that one of its great advantages from the standpoint of military assistance is its maintainability.

General Russ. It is forecast to have an excellent maintainability, and reliability. Certainly the evidence we have on the F-5 indicates that it certainly should do that.

If we had F-20's in our force, they would be probably easier to sell overseas. That is a truism, I think. But, then again, the F-5's were not in our force and we sold a lot of those overseas. We finally did put some of them in our force. I think the F-20 is an excellent airplane. The Air Force is the Department of Defense executive agent for it. We monitor it. I have had some of my pilots fly the airplane. They think very highly of it. I have gone out and looked at it, climbed in it, seen the test results and I am very impressed with it.

I think it would be an excellent airplane for foreign military sales. We don't have any place for it in our active fighter force structure.

Senator Wilson. Thank you, Mr. Chairman.

Senator Kennedy. Why is it good to sell it overseas to our allies and not to ourselves?

General RUSS. Our requirements are a little different than our allies. As an example, we have to go from the United States overseas to fight.

In other words, we have to have airplanes that have long ranges, long ferry ranges. Some of our airplanes require some higher sophistication because of some of the high performance threats we have to go after.

An airplane, as an example, in the Peruvian Air Force of Chilean Air Force or an airplane in the Singapore Air Force certainly doesn't have the same threat we have and could be somewhat simpler.

Although I might say the F-20 can be a very sophisticated airplane, if you put on all the things that are available to put on the airplane.

AIR FORCE FIGHTER ROADMAP SUMMARY

Continue cost effective modifications to improve reliability, maintainability, survivability and combat effectiveness.

Increase F-15 and F-16 production rates to flesh out, modernize and sustain both the 40 TFW air defense forces.

Exploit growth potential of current aircraft and engines: procure dual role fighters to meet the need for increased range/payload and day/night under weather attack; continue development leading to late 1980's procurement of the F-16F for day/night air-to-ground operations with secondary air-to-air capability follow up alternate fighter engine program with competition for mid term performance growth.

Develop the advanced tactical fighter with a new advanced engine to replace the F-15 as the first line air-to-air fighter with an IOC in the mid 1990's.

This chart is the last one. Let me quickly summarize it.

I showed you what we are trying to do to improve the reliability and maintainability of our forces. We are increasing the production of our F-15 and F-16 to modernize and sustain our 40 tactical fighter wing force and we are trying to exploit the growth protection of both aircraft engines by looking at a follow-on model of the F-16 and follow-on engine programs that would provide performance growth.

Finally, we are continuing on a program to introduce a new generation of fighters in 1990 called our advanced tactical fighter.

Sir, that completes my section of the briefing. If there are any questions—if not, I would like to turn it over to General Monahan who will get into some of the specifics on the dual-role fighter and some of your questions you have about the Lantirn and AMRAAM.

[The joint prepared statement of Dr. Cooper and General Russ follows:]

UNITED STATES AIR FORCE

FY 1985 BUDGET ESTIMATES

- AIRCRAFT PROCUREMENT
- MISSILE PROCUREMENT
- RESEARCH, DEVELOPMENT, TEST & EVALUATION

JOINT STATEMENT OF

HONORABLE THOMAS E. COOPER
ASSISTANT SECRETARY OF THE AIR FORCE
(RESEARCH, DEVELOPMENT & LOGISTICS)

LIEUTENANT GENERAL ROBERT D. RUSS
DCS/RESEARCH, DEVELOPMENT & ACQUISITION
HQ, UNITED STATES AIR FORCE

PRESENTED TO THE 98TH CONGRESS 1984

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, D.C.

Members of Congress

Over the past two decades, the Soviets have relentlessly modernized and expanded their military capability. To counterbalance this massive Soviet buildup, this nation has, for the past three years, been embarked on a steady course to restore the strength and credibility of our strategic and conventional forces. Our sustained national commitment to a stronger defense has been a signal to the world of our resolution to protect our vital interests from the global Soviet reach.

The Air Force budget request for Fiscal Year 1985 remains consistent in its priorities and continues the momentum to rebuild the deterrent capability of our forces. Our modernization programs have laid the foundation for a well-balanced and measured course to correct our most pressing deficiencies in our on-line weapon systems and in our readiness and sustainability.

This statement is organized according to Air Force budget priorities. Our objective is to maintain quality people and a quality force. After people, our priorities are to modernize our strategic forces, to improve the readiness and sustainability of our forces, to enhance our force projection capabilities, modernize and expand our theater forces, and improve our capabilities in space.

For your convenience and ease of review, we have included an Executive Summary to this statement which describes the threat to U.S. national security and the thrust of the major Air Force research, development, acquisition and logistics programs to meet that threat. Following the Executive Summary is an Introduction to our major Air Force investment programs. Our acquisition initiatives and our technology base efforts are also highlighted in the Introduction. The remaining Sections follow our budget priorities and discuss the major programs within each priority for Fiscal Year 1985.

Since the research, development, acquisition and logistics programs represent future capabilities, it is important that they be carried out fully and completely--not just for Fiscal Year 1985, but for years to come. Our programs are economically feasible and supportable over the long run. In addition, we are emphasizing efficiency, better management and innovative cost-effective approaches in the selection and development of our weapon systems.

We urge your support for the Air Force programs in the Fiscal Year 1985 budget request.

Thomas E Cooper

THOMAS E. COOPER
Assistant Secretary of the Air Force
(Research, Development and Acquisition)

ROBERT D. RUSS, Lt Gen, USAF
Deputy Chief of Staff, Research
Development and Acquisition

EXECUTIVE SUMMARY

We begin our statement with an overview of the serious threat which confronts the United States--the ever increasing military power of the Soviet Union. It is this threat that determines our budget priorities, as well as our programs for the next five years. Our objectives are to develop and field weapon systems necessary to meet the Soviet challenge in the late 1980s and beyond, and to get the most out of the defense dollar. In addition, we are firmly resolved to increasing efficiency in our weapon system acquisition process, controlling cost and using our technological advantage.

The Soviets are building a vast military machine which each year encourages them to undertake more political and military adventurism. Soviet military investment during the last 10-15 years has resulted in a larger, more modern and ever growing Soviet military force structure, both strategic and conventional. These investments have allowed them to steadily gain military advantages, which, if left unchallenged, would create a dangerous instability in the balance of power. It is important to note that through the rest of the 1980s, even with the projected increases in U.S. defense spending, the Soviets will continue to outspend and outproduce us.

The Soviet threat is real. It is a threat that will not dissipate in the foreseeable future. We face an adversary whose long term political goals are incompatible with our own. It is imperative that we continue our efforts to protect our vital interests around the world, to deter any use of force, and to develop a firm basis for negotiating reductions in nuclear armaments.

The Air Force budget request for Fiscal Year 1985 represents a realistic assessment of the programs necessary to respond to the Soviet threat. The request was constructed with considerable deliberation regarding a balance among required military capability, program priorities and available resources. Our objective is to maintain quality people and a quality force. After people, our priorities are to modernize our strategic forces, to improve the readiness and sustainability of our forces, to enhance our force projection capabilities, modernize and expand our theater forces, and to improve our capabilities in space.

Today's investments in research, development, test and evaluation, procurement and military construction provide tomorrow's force structure growth and capability. In Fiscal Year 1985, about 60 percent of our total request is for investment programs. To maximize the return on this investment, the Air Force has several management initiatives underway to enhance program stability, control cost and revitalize the industrial base. By managing our defense dollars wisely, we benefit not only from lower acquisition cost, but also lower life cycle cost. Of special importance to our future is our investment in the technology base. Opportunities for applying technology, such as very high speed integrated circuits and laser beams, to military capability must continually be researched and developed if we are to maintain technological superiority in the future. Continued support for our technology base programs will assure a prudent investment in our future defense against Soviet military aggression.

Air Force people continue as our first priority. We have the best people in the world doing the most important task we can ask them to do--protect our national security. These men and women do the job we ask of them, and do it well. In return, we must continue to treat them equitably and fairly if we are to retain them and if we are to recruit qualified replacements for those we lose.

/ Our number one mission area priority is strategic forces. This is a fundamental element of the Administration's plan to achieve true arms reduction through negotiation, not intimidation. For the Air Force, the objective is clear--to improve our strategic command, control and communications systems and to modernize the intercontinental ballistic missile and the bomber legs of the strategic Triad. Our current forces are old. The newest intercontinental ballistic missile, the Minuteman III, entered the force over 10 years ago and our newest heavy strategic bomber, the B-52H, has been in the force over 20 years.

As the most critical element, strategic command, control and communication holds the highest priority within the President's Strategic Modernization Program. The command, control and communications link to the National Command Authority is vital, and our programs focus on communication links which are survivable in all scenarios. Such programs as MILSTAR and the Ground Wave Emergency Network will greatly improve our ability to communicate with our strategic forces and enhance our deterrent capability. Strategic command, control and communications forms the capability bridge between offensive and defensive forces.

In offensive forces, the Peacekeeper is being developed according to the Presidentially-approved Scowcroft Commission recommendations. It is urgently needed to strenghten our deterrent posture. We are now in full scale development and are planning an initial operational capability in late 1986.

We are also developing a small intercontinental ballistic missile to complement the Peacekeeper and sustain our nuclear deterrent capability in the 1990s and beyond. We are now investigating and assessing alternate technologies in a system definition phase. Design selections for the small, single warhead missile, its transporter and the operational mode will be made by early 1987.

The B-1B remains the centerpiece of the modernization of the bomber leg of the strategic Triad. The manned bomber is the most flexible of strategic weapons. For the near term, the B-1B, in conjunction with the B-52s, Air Launched Cruise Missiles, and targeting sensor enhancements, will provide a powerful, accurate, and reusable weapon delivery system. For the far term, the B-1B, the Advanced Technology Bomber, and the Advanced Cruise Missile, with their designed-in low observables technologies, will comprise the bomber leg of the U.S. strategic Triad for the next 30 years.

Strategic defense programs are designed to upgrade aging surveillance and warning systems and expand our capability to meet evolving atmospheric, missile, and space threats. We are participating in structuring a program to support the President's Strategic Defense Initiative to counter the Soviet ballistic missile threat with measures which are defensive, rather than retaliatory. The Initiative integrates many technology programs including surveillance, acquisition, tracking, kill assessment, and directed energy weapons. Initial studies on strategy and technology have been completed and a long term research and development program is being defined.

Improving the readiness and sustainability of our combat force continues to be one of our highest priorities. Readiness is the capability of forces, units, weapons systems, and equipment on-hand to accomplish assigned missions. It is achieved through realistic operational training, maintaining elements of the force at a high proficiency level, and ensuring each unit has sufficient spare parts to begin combat. Sustainability is the "staying power" of our forces to fight during and beyond the initial period of combat. Sustainability is our ability to replace those resources used during combat by having the ability to generate adequate spares, supplies, munitions and fuel. Sustainability is a function of peacetime stocks, the support infrastructure, war reserve material, and industrial production.

When our forces are well equipped, ready for combat and capable of conducting sustained combat operations, then our deterrent capability is enhanced. During the past three years, we have been redressing the low defense spending of the mid-to-late 1970s that resulted in a major reduction of readiness and sustainability through deteriorated physical plant, cutbacks in combat crew training, and large backlogs of equipment and facility maintenance. Our Fiscal Year 1985 budget request continues the trend to correct these deficiencies. This year's program emphasizes spare parts, munitions, fuel, support equipment and depot maintenance capability. We are also continuing the implementation of simulation to maintain weapons operation proficiency, and are requesting funds for sufficient wartime consumables and common ground equipment to underpin a ready and responsive force.

Our next mission area priority is enhancement of our force projection capabilities. Mobility forces are essential to our force projection strategy because they provide the link between force structure and combat capability. During critical early phases of a conflict, only airlift has the responsiveness and flexibility to meet mobility requirements in the days or weeks before the first sealift deliveries begin.

The evolving threat and the growing capability of the Soviets to attack with little warning have pushed demands for airlift well beyond the capabilities of our current forces. A rapid and sufficient airlift capability could prevent substantial losses and avoid an escalation of hostilities. Even with the enhancements planned for our existing forces, we will still have serious shortfalls in our capability for intertheater airlift of outsize, oversize, and bulk cargo.

Our overall airlift enhancement strategy is divided into three parts: improvements to existing forces, near term capability increases, and attaining the long term level of capability recommended by the Congressionally Mandated Mobility Study. Programs ongoing today to enhance our mobility posture include the modification of the C-5A wing, procurement of the C-5B and KC-10, modernization of the KC-135, building the Civil Reserve Air Fleet (CRAF) Enhancement Program and development of the C-17.

Modernizing our theater forces is the next mission area priority. To meet the challenges and threat confronting us throughout the world, our forces must be capable, flexible, ready, and sustainable. Our program to respond to this threat is based on reaching a balance between readiness and sustainability and modernization of our theater forces.

Our tactical air forces must be able to achieve air superiority, provide offensive air support to friendly ground forces, and interdict and destroy key targets. To quickly achieve and maintain air superiority, our forces must have aircraft that can detect and destroy numerically superior and sophisticated Soviet fighters and bombers. This requires effective avionics, weapons, and propulsion systems. Similarly our forces must have the aircraft and weapon systems that can operate effectively in an air-to-ground role at night and during adverse weather with minimum exposure and losses.

We have developed a Munitions Acquisition Plan to ensure we procure the proper mix of precision guided and unguided weapons. We have also developed a Tactical Fighter Roadmap to guide our fighter procurement. The roadmap includes the acquisition strategy for the required numbers of fighters, the right mix of fighters, and the quality improvements needed for our fighters.

The focus is on modernizing and expanding our existing force structure of F-15 and F-16 fighters and fielding a night and all-weather capability in both avionics and munitions. Our fighter enhancement programs include procurement of a more durable engine, a dual role fighter, and quality improvements such as the Advanced Medium Range Air-to-Air Missile and the Low Altitude Navigation and Targeting Infrared System for Night. For the 1990s, we are developing an Advanced Tactical Fighter that will ensure our qualitative edge in air-to-air missions.

Modernizing our theater forces also includes the deployment of the Ground Launched Cruise Missile in Europe to help correct the imbalance in capability between NATO and the Warsaw Pact. In addition, it includes our efforts to reestablish and maintain a credible chemical deterrent base on a strong chemical defense and an adequate retaliatory capability to deter Soviet use of chemical weapons against the United States or its allies.

Enhancing our capabilities in space is another one of our high budget priorities. Space is an environment which supports all of our mission areas.

Space systems are a vital element of our forces. Many of our missions require the global coverage and timely information which can only be provided from space systems. Because space systems enhance the effectiveness of our forces, we are improving their surveillance, communications, navigation, and survivability capabilities. We highlight our efforts in space as part of our strategic discussion because the space environment is significant to our strategic posture.

It is imperative that we continue to pursue our objectives to protect our vital interests around the world, to deter any use of force, and to develop a firm basis for negotiating reductions in nuclear armaments.

Congressional approval and funding of the programs in our Fiscal Year 1985 budget request will demonstrate our resolve to strengthen our national defense and protect our interests worldwide.

SECTION I

INTRODUCTION

THREAT TO NATIONAL SECURITY

Throughout the 1980s, the United States will continue to face a growing Soviet military threat to its national security. The Soviet Union has dedicated itself to constructing a military force second to none in the world. For the past twenty years, the Soviet Union has invested a substantial portion of its economic input to a build-up of military forces far beyond required defensive needs. For example, in 1983 the Soviets devoted approximately 15 percent of their Gross National Product to national defense versus seven percent for the United States.

During the 1978-1983 period, the Soviets spent twice as much as the United States on defense. During this four year period, they outproduced the United States in intercontinental ballistic missiles and submarine launched ballistic missiles (4.9 to 1), theater nuclear missiles (6.2 to 1), surface-to-air missiles (2.9 to 1) and tactical aircraft (1.8 to 1).

The growing strategic threat to the United States is a direct result of larger Soviet investments in strategic weapon systems during the past fifteen years. The momentum and magnitude of Soviet procurements has led to a significant increase in the numbers of Soviet ballistic missiles, reentry vehicles and delivery systems.

Over the last four years, the Soviets have added more than 2500 strategic nuclear warheads, and every indication points to them continuing to add to their total of more than 8,000 strategic nuclear warheads. They maintain the world's largest and most modern force of intercontinental ballistic missiles and ballistic missile submarine force. And they are demonstrating renewed interest in strategic bombers with the development of the new large BLACKJACK long range bomber and the series production of a new variant of the BEAR, designated the BEAR-H, specifically designed to carry long range cruise missiles.

Although the United States has an advantage in submarine launched ballistic missile reentry vehicles, the other Soviet quantitative as well as qualitative advantages have disturbing implications for strategic stability. Viewed in this context, the need for continuing the President's strategic modernization program is clear and compelling. It also emphasizes the criticality of pursuing genuine, equal, and verifiable reductions in nuclear weaponry to reduce the risk of war and enhance strategic stability.

Similarly in space, U.S. efforts have substantially lagged behind those of the Soviet Union. During the past ten years, the Soviets annually have launched four to five times as many space systems as the United States. Their annual payload weight placed in orbit was as much as 10 times that of the United States. The Soviet satellite and launch capacity provide them with unique military capability and flexibility, which they are intent on enhancing.

Since 1971 and the launch of their manned space stations, the Soviets have amassed twice as many man hours of in space experience as U.S. astronauts. By the end of this decade, the Soviets will be deploying a reusable launch vehicle similar to the U.S. space shuttle; they will also have two new expendable launch vehicles--one of which has five to seven times the capacity of the U.S. shuttle. Their new launch systems will allow greater support of their increasingly complex manned space missions, their expanding operational antisatellite capability, and their future space weapon systems, such as space-based lasers.

The following table, showing a comparison of in-place Warsaw Pact versus NATO tactical air forces, portrays the shift in conventional air forces which has resulted from the large spending difference between the superpowers:

Ratios of Warsaw Pact/NATO Tactical Air Forces

	1978	1983
Interceptors	4.6 : 1.0	6.0 : 1.0
Fighter-Bombers	0.9 : 1.0	1.0 : 1.0
Reconnaissance	1.6 : 1.0	2.1 : 1.0

The comparisons become even more disturbing if we examine the U.S./Soviet comparison in a broader context. The pre-1970 period was clearly a time of U.S. weapons superiority across the entire spectrum of conflict. Even then, the Soviets were building conventional weapons at a rapid enough pace to reach equivalence by the 1970s, although the United States maintained a slim lead in nuclear capability. Into the late 1970s, United States weapons development and production lagged to such an extent that nuclear capabilities have become essentially equivalent and the conventional weapons gap is, in fact, widening in favor of the Soviets. Trends such as these, if not reversed, could lead the United States to a position in the late 1980s of weapons inferiority.

Not only are Soviet weapon system quantities increasing, but their quality is also improving dramatically. For example, since 1970 we have seen six new series of advanced fighter aircraft, two new bombers, four new air-to-air missiles, six new surface-to-air missiles and ten new ballistic missile systems, some of the latter with very accurate hard-target kill capability. These quality enhancements come from a Soviet research and development infrastructure which continues to obtain and use Western technology and which employs 900,000 engineers and natural scientists in military purposes, while the United States uses less than 700,000. Students receive advanced degrees in scientific and technical fields in the Soviet Union at twice the rate of the United States, further enhancing the Soviet military technology infrastructure.

The objective of the President's defense modernization program is to arrest these trends and restore a more stable deterrent force balance. From this basis, the United States will actively pursue mutual arms reduction and control agreements which will assure an enduring parity of forces for the future.

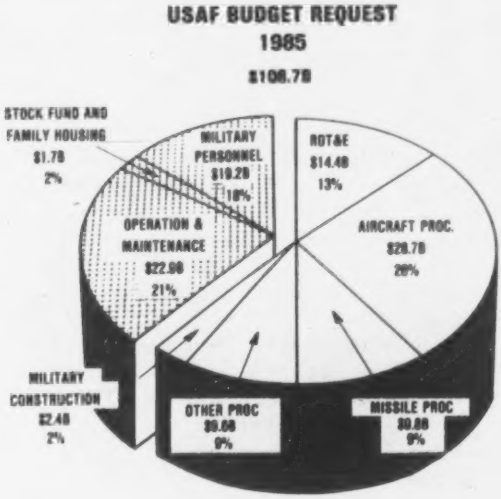
A credible deterrent requires modernization of U.S. strategic nuclear forces so that the Soviet Union will not have confidence in their ability to conduct a successful nuclear first strike. It also requires that the United States, along with its allies, modernize and maintain conventional forces that will likewise deter aggression. However, should deterrence fail, these forces must be capable of checking Soviet adventurism.

BUDGET PRIORITIES

The Air Force research, development, procurement, and logistics programs for Fiscal Year 1985 support U.S. national objectives for a credible deterrent with mutual arms reductions. These programs have been structured according to priorities that emphasize Air Force people first, then seek to modernize our strategic forces, build combat readiness and sustainability, enhance force projection, and modernize and expand our theater forces. These priorities are consistent with the program established by the current administration three years ago.

Subsequent sections of the statement will address the Fiscal Year 1985 Air Force research, development, acquisition and logistics programs in terms of their contributions to strategic forces, readiness and sustainability, force projection, theater forces, and space.

The Air Force budget request for Fiscal Year 1985 continues the momentum of modernizing our deterrent capability. Military investment, which consists of the procurement of weapon systems, RDT&E and military construction, is the key to future growth and capabilities. In Fiscal Year 1985, about 60 percent of our total Air Force request is for investment. The remaining 40 percent is for our operating accounts. The figure below illustrates the major appropriation categories of the Air Force budget. The clear area represents our investment accounts and the checkered area our operating accounts. Shown in each segment are the dollars requested for Fiscal Year 1985 and the percentage of the total budget request.



Funding within the procurement and RDT&E accounts is provided in the tables at Appendix A. Detailed information is provided separately to Congress: for each of the procurement programs, in the Department of the Air Force Justification of Estimates for Fiscal Year 1985; and for each of the RDT&E programs, in the Descriptive Summaries for Fiscal Year 1985. Information on military construction programs is also provided to those committees responsible for authorizations and appropriations.

MANAGEMENT INITIATIVES

Supporting specific system programs and mission areas, the Fiscal Year 1985 program includes management initiatives to enhance program stability, control cost, and revitalize the industrial base.

We see program stability as the essential ingredient to truly effective cost control. We are attempting to stabilize procurements through emphasis on economic order quantities and stable production rates. The multiyear procurement technique continues to be the primary method by which we can benefit from program stability in our major programs. The approach has demonstrated significant savings in the past and will continue to be applied to stable programs to effect savings. Since 1982, when Congress expanded the Department's authority to use multiyear contracting procedures on major programs, the Air Force has initiated multiyear procurement on eight major programs with estimated savings in excess of 2.5 billion dollars. In

Fiscal Year 1985, we are proposing multiyear procurement for F-16 Simulators and F-16 Airframes. The airframe proposal is a follow-on multiyear procurement to our successful Fiscal Year 1982 F-16 multiyear program for 480 airframes. This proposal will cover 720 airframes over four years and we estimate savings of $231.6 million will be realized by its enactment.

A system of baselines for major programs which will involve decisions and commitments by top Air Force leadership is also being implemented. Our intent is to improve control of a weapon system program with an agreed-to content and cost. We are also emphasizing up-front consideration of acquisition logistics in a program to achieve greater life-cycle cost savings.

Revitalization of the industrial base is extremely important to the overall defense capability of the nation. We are enhancing the readiness of the industrial base through a program of research, development, and acquisition of modern, automated production capability, combined with increased use of investment incentives to improve our production capability.

TECHNOLOGY BASE

The foundation of our military capability is our technology base. Our ingenuity continues to provide the technology we need to field modern and capable systems second to none. Today's technology base funding represents tomorrow's defense posture. Through basic research, exploratory development, and advanced technology demonstration, current problems are solved and new avenues are opened for future weapon systems. Maintaining technological superiority depends upon our support of the technology base, both in the military and commercial environments.

We have seen commercial research and development evolve into opportunities for new military applications. An example is the development of laser technology for communications, target designation, and in the future, target destruction. One of our most important technology efforts is the Very High Speed Integrated Circuits (VHSIC) program. VHSIC will accelerate by five years the availability of very large-scale integration for military systems, yielding 5- to 10-fold weight and size reductions, 100-fold throughput increases and 10- to 100-fold reliability improvements. The program has made excellent progress, with initial component deliveries set for 1984. Initial designs using VHSIC are already underway in five Air Force systems, including the ALQ-131 electronic warfare pod and a generic digital signal processor. By the late 1980s, VHSIC will be the key implementing technology in dozens of applications ranging from radar to communications to autonomous weapons to electronic warfare. Military applications of these commercial technologies make investment in commercial R&D a long term multiplier for the national economy, as well as national security.

The sections which follow provide highlights of the major programs included in our Fiscal Year 1985 budget request. These programs, as well as the others in our request, will assure that our defense posture not only remains strong today, but will be even stronger in the future.

SECTION II

STRATEGIC FORCES

The massive, destabilizing and unrelenting arms build-up the Soviets have pursued over the last two decades has caused a shift in the strategic balance. This Soviet build-up of strategic forces is the result of a determined and sustained Soviet investment which, in the past ten years, exceeded that of the United States by about $320 billion (1985 dollars). We continue to see the results of these sustained investments. Soviet advantages in strategic force capabilities provide added incentives for Soviet adventurism and make meaningful and equitable arms reduction agreements more difficult to achieve. Unless the Soviet build-up is countered by U.S. initiatives through modernization and arms limitations, we face the ominous prospect of substantial Soviet military superiority and political adventurism in the years ahead.

Strategic forces remain our first priority for modernization in this budget request. This national commitment is dictated by the need to restore a margin of stability and deterrence in the strategic balance between the United States and the Soviet Union along with our desire to motivate meaningful arms control negotiations.

The primary objective of our strategic forces is to deter Soviet nuclear aggression and coercion against the United States, its Allies, or others whose security is vital to our national interests.

To maintain the credibility of this deterrent, our strategic forces must be clearly seen by the Soviets as able to respond appropriately at any level of conflict and as capable of denying their political and military objectives. Moreover, our strategic forces must be designed so that the Soviet Union will not perceive any advantage in initiating a nuclear attack in a crisis. Our forces must be able to hold at risk a wide range of the enemy's assets, including hardened military and leadership facilities, even after a Soviet first strike. If our strategic forces are clearly able to meet these conditions, then the Soviet Union can have no confidence that an attack by them would be successful.

Our strategic Triad concept--three separate and independent yet mutually reinforcing deterrent elements consisting of the submarine launched ballistic missile leg, the land-based intercontinental ballistic missile and the bomber leg (including cruise missiles and tankers)--supports deterrence in at least two important ways. First, it reduces our risk of being attacked since the Soviets would not be able to neutralize all three legs simultaneously. Second, it forces the Soviets to invest more resources in their defensive systems, rather than offensive, to counter the sea, land, and air threats presented by the strategic Triad. Modernizing our strategic Triad will redress the strategic imbalance and maintain a credible U.S. deterrent.

Equally important to our strategic deterrent capability are our strategic defense forces and the command, control and communications (C^3) elements which link all of our strategic forces into a coherent retaliatory system. Together they provide high confidence early warning, comprehensive support for the National Command Authority and commanders' decisions, and reliable command and control of our forces. Our strategic defense forces increase Soviet uncertainties in their capability to mount a surprise attack against the United States.

The deterrent capability of our strategic forces has served us well in the past, and will continue to serve us well in the future--but only if we continue to modernize and maintain the strength of each component of our strategic Triad and our strategic defense systems, as well as their supporting C^3. Revitalizing our strategic forces will not only provide a more secure and stable deterrence, but will also increase Soviet incentives to negotiate meaningful and verifiable arms reductions.

Space systems support both strategic and conventional forces by providing global coverage to missions more efficiently from space. Spaceborne surveillance, warning, communications, meteorological, and navigation systems increase the effectiveness of military operations on the modern battlefield.

Our objectives in space include: pursuing a vigorous R&D program to give us future options in space; placing in space those functions that can be accomplished more efficiently and more cost effectively; and developing an antisatellite system that assures our free access to space and deters Soviet attacks against our satellites in orbit.

Our plans for space include: making our space systems, including the satellites, the ground processing stations, and the user interfaces, more survivable from attack; improving the surveillance, communications, and navigation capabilities of our space systems; and increasing the robustness of our space system network by removing single nodes, procuring backup satellites, and reducing our dependency on overseas ground stations.

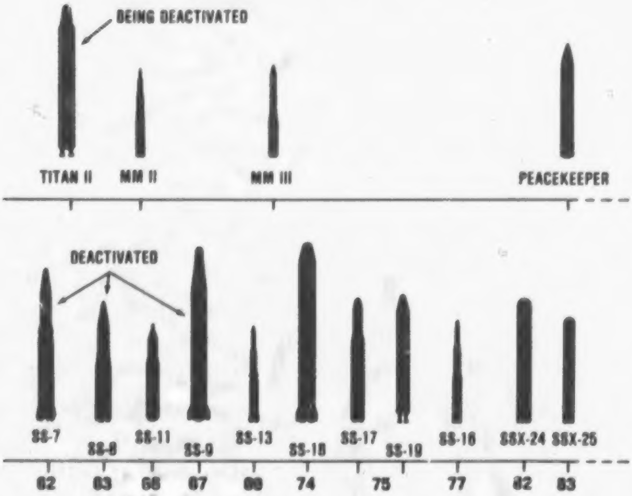
In addition, we are also concentrating our efforts on doing more with each launch by deploying satellites with multiple missions and with much longer operational life. To optimize our deployment and on-orbit performance, we are evaluating alternate space launch capabilities, improving our space operations capabilities, and aggressively pursuing advanced, space-related technology.

STRATEGIC OFFENSE

Land-based intercontinental ballistic missiles (ICBMs) have unique characteristics that are essential to deterrence. They are accurate, responsive, enjoy reliable real-time communications with command authorities, possess a short time-to-target capability, offer peacetime alert rates approaching 100 percent, and are less expensive to operate and maintain than the other two strategic Triad forces. Combined with the other force elements of the strategic Triad, ICBMs place significant stress on Soviet offensive and defensive capabilities.

However, over the last two decades, the Soviets have developed and deployed several generations of advanced ICBMs with large throwweight and high accuracy that have given them the capability of destroying significant portions of our existing Titan and Minuteman ICBM force in a first strike, while expending a relatively small proportion of their ICBM force.

U.S. AND SOVIET ICBM DEVELOPMENT HISTORY



Of equal importance, the Soviets have hardened many of their high valued strategic installations, including their ICBM silos and critical command and control facilities, to the point that our Minuteman force has only limited capabilities against them. This imbalance in such a critical component of strategic capability seriously undermines the effectiveness of our nuclear deterrent. This is an especially dangerous development in light of Soviet doctrine which, during time of war, stresses preemptive destruction of U.S. strategic forces and limitation of damage to the Soviet Union's forces and mainland.

Our latest efforts to address this imbalance were formalized in April of 1983 by the recommendations of the President's Commission on Strategic Forces. The resulting ICBM modernization plan is an integrated approach to (1) deploy 100 Peacekeeper missiles on a priority basis into existing Minuteman silos in Wyoming and Nebraska; (2) initiate immediate engineering design of a small, single-warhead ICBM; (3) investigate different types of land-based vehicles and launchers, particularly hardened vehicles; (4) undertake a research program to resolve uncertainties regarding silo or shelter hardness applicable to Peacekeeper and small missiles; and (5) continue research on the deep basing concept.

ICBM modernization is built on the realization that all ICBM tasks cannot be served by a single weapon and a single basing mode. Therefore, the President's ICBM modernization plan is based both on a near-term and long-term phased approach. The near-term phase, Peacekeeper in existing silos, will reduce the current Soviet advantage in ICBM capability and help deter the threat of conventional or limited nuclear attacks on the United States and its allies. For the long term, compatibility of ICBMs with the need for flexibility and innovation in responding to possible Soviet actions is very important. This phase will include deployment of a small, single-warhead ICBM in one or several basing modes, with mobility being emphasized, and continuing evaluation of ICBM deployments. Our modernization program is intended to satisfy the immediate needs of our ICBM force, and provide a transition toward more stable ICBM deployments with reduced target value and more flexible basing for greater survivability. This phased approach will enhance strategic stability, encourage arms control measures, and reduce the risk of war.

The Peacekeeper missile is a four-stage ICBM that is planned to carry ten independently targetable warheads. Peacekeeper will be more accurate, carry more warheads, and have greater range and targeting flexibility than the Minuteman ICBM. Along with these advantages, its greater resistance to nuclear effects and its more capable guidance system provide the Peacekeeper with a much-improved capability to destroy very hard targets. The highly accurate Peacekeeper will start to redress the current imbalance in U.S. and Soviet hard-target capability; upgrade some of the aging U.S. ICBM force; be fully compatible with existing and proposed arms agreements; provide an impetus to serious negotiations; and demonstrate U.S. resolve to maintain a strong strategic deterrent.

One hundred Peacekeeper missiles will be deployed in 100 existing Minuteman silos. The missile was designed to fit into existing silos without major silo modifications. Basing full scale development was initiated in June 1983 to define specific changes to the silos, C^3 improvements, and support facility requirements. A draft Environmental Impact Statement was prepared and released for public comment in October 1983. A 45-day public comment period ended on 28 November 1983. The final Environmental Impact Statement was released in early 1984.

Construction of support facilities will begin in mid-1984. Silo modifications for the first set of ten missiles will begin in early 1986, leading to an initial operational capability of ten missiles in December 1986. Full operational capability of 100 missiles will be achieved in December 1989.

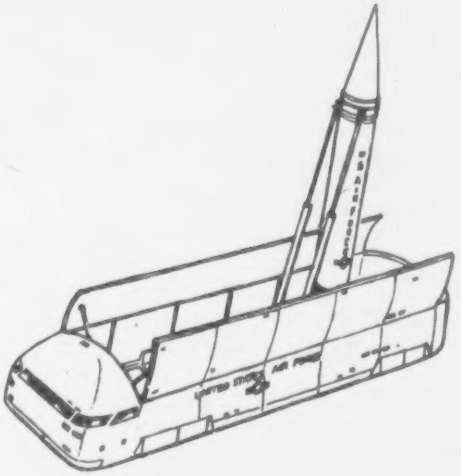
Peacekeeper Intercontinental Ballistic Missile

Peacekeeper is now in full scale development. A highlight of 1983 was the start of the combined Peacekeeper development test and evaluation and operational test and evaluation program. The first test flight was conducted 17 June 1983, the second 14 October 1983, and the third 20 December 1983. All were highly successful. Fiscal Year 1985 funding will be used to continue missile production, test and evaluation; construction of support facilities, and deployment planning and development.

The Department of Defense and the Air Force have made a very aggressive start in the development of a small Intercontinental Ballistic Missile (ICBM) and a hardened mobile transporter. In May 1983, a separate Program Office was established to be responsible for development and acquisition of the small ICBM and basing technology.

The Air Force also convened a group headed by retired General Bernard Schriever to recommend the best acquisition strategy and management approach. The Schriever Group recommended a three-phased program approach that the Air Force is now following: system definition, pre-full scale development, and full scale development. System definition now underway will involve assessment of alternative technologies. A key to developing the small missile is to build on Peacekeeper technology. Determining applicability will be a major goal of system definition.

Pre-full scale development will start in late 1984 and be characterized by competitive efforts on missile design and integration, the hard mobile launcher, and propulsion stages, leading to a firm system baseline. Full scale development will begin in late 1986 or early 1987 after selection of the best design for the missile, transporter, and operational basing mode or modes. It will lead to flight testing in 1988 and initial operational capability in 1992.



Artist Concept of a Small ICBM in Mobile Launcher

Major 1983 Small ICBM events were the solicitation of system definition contracts, the Direct Course Blast Test conducted 26 October 1983--which yielded valuable information on hardened mobile launcher capabilities--and the already mentioned Schriever Group report. The program is receiving extensive management visibility throughout the Office of the Secretary of Defense and the Air Force to ensure steady progress. An Office of the Secretary of Defense Small Missile Review Panel has been established, as well as a Small Missile Steering Group. Fiscal Year 1985 funding will be used to continue advanced development of the small ICBM and basing modes.

Follow-on basing technology efforts have been characterized by continuation of ongoing work in hardening and deep basing technology. Test results, which have been impressive, suggest that hardness levels up to 50 times greater than current U.S. silos may be achievable. Eight tests were conducted starting in late 1982 to develop and validate techniques for predicting and verifying hardness. These included the Dry Site Test series of six tests and two wet site tests. All were highly successful, indicating much promise for achieving predicted hardness levels.

Significant results were also achieved in deep basing technology. Two demonstrations were conducted at the Nevada Test Site in April 1983. The vertical egress paths consisted of approximately 100 feet of consolidated rock and approximately 50 feet of rubble to simulate a nuclear crater. Both demonstrations, using two tunnel boring machines, validated the feasibility of vertical egress. Research efforts now are concentrating on the effects of nuclear weapons and their ability to destroy or disable underground facilities and stored resources. Fiscal Year 1985 funding will be used to continue testing to validate technology and develop basing modes.

To provide timely response to Soviet technology advances, in Fiscal Year 1985 we are also continuing advanced development of ICBM subsystems in the Advanced Strategic Missile Systems (ASMS) program. These developments will provide further options to improve the accuracy of ICBMs and the ability of ICBMs to penetrate Soviet defenses. Results are being made available to the Navy for possible submarine launched ballistic missile application.

Modification programs for the Minuteman force include the Minuteman Extended Survivable Power program to provide lithium batteries for 200 Minuteman III silos. These batteries will extend Minuteman on-alert time significantly by augmenting existing commercial, stand-by diesel, and lead-acid battery power sources. Other modification projects in Fiscal Year 1985 support reliability and maintainability upgrades.

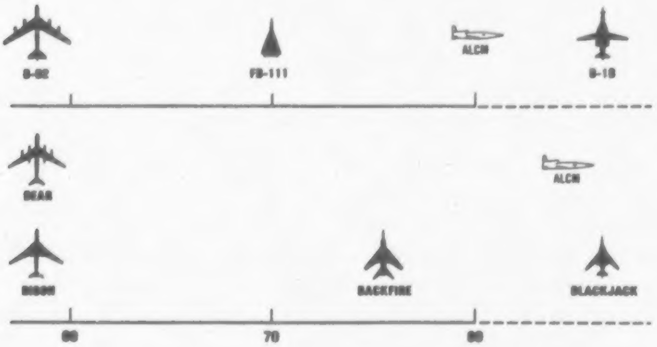
While we are implementing the ICBM modernization program, significant improvements will be made in their supporting C^3. We are continuing to improve the Minuteman communications system through increased reliability and enhanced connectivity with higher authority. The Peacekeeper program will improve the capability of the Airborne Launch Control System by adding an ultra high frequency uplink from each Peacekeeper launch facility. The ability to retransmit throughout the ICBM communications network is also being upgraded.

The unique military characteristics of the manned bomber provide a vital dimension of flexibility to our forces. They are an overt sign of committed, yet controlled national resolve, and as reusable strategic weapons systems, they can accurately deliver large nuclear or conventional payloads.

The strategic manned bomber has the capability to react effectively to crises prior to any decision to employ its payload. During a crisis, manned bombers can be launched to ensure their survivability, or to signal national resolve through show of force. As the situation requires, bomber crews can then be redirected or recalled with confidence. Once employed, their range, payload, and other operational characteristics enable bombers to penetrate enemy defenses to strike virtually any target. They also have the capability to conduct strikes against unanticipated, imprecisely located, or relocateable targets. In addition, through the use of human judgment and on-board sensors, crews can verify target location and evaluate target status prior to employing payloads. Thus, the high assurance of mission success, the time of flight to targets, and positive human control throughout the mission make the bomber a major element of crisis stability during periods of high tension.

The manned bomber provides a major element in our ability to project a nonnuclear force--either to complement our tactical forces or to respond to unforeseen contingencies worldwide. Additionally, bombers are able to provide maritime support to U.S. naval forces through long-range sea surveillance, ship attack and mine laying.

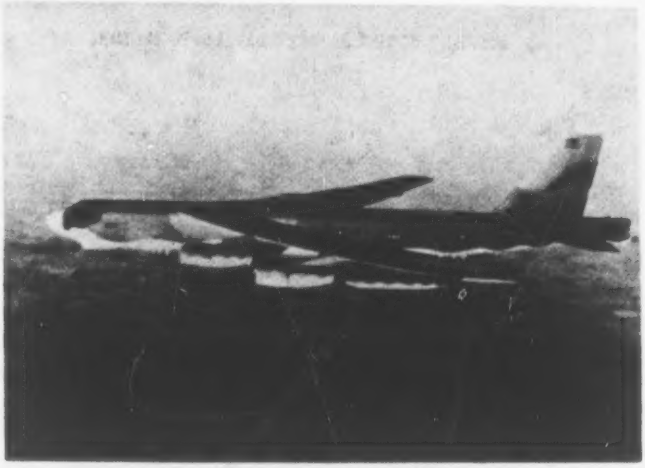
U.S. AND SOVIET BOMBER DEVELOPMENT HISTORY



The limitations inherent in the B-52, which has been operational for over a quarter of a century, make it imperative that we start fielding a follow-on bomber now. We have begun a time-phased bomber modernization program designed to effectively use the existing capabilities of the B-52 while laying the groundwork for our future bomber force.

We retired the last of our B-52Ds in 1983, and are phasing down our B-52 R&D efforts. However, we are continuing several modernization programs in Fiscal Year 1985 to take advantage of the strengths of our remaining B-52 forces. These programs include modifying the major portion of these forces for integration of the Air Launched Cruise Missile and upgrading the electronic warfare suite. In addition, we are continuing to incorporate the upgraded Offensive Avionics System on B-52Gs and B-52Hs. B-52s are also receiving reliability and maintainability modifications, such as the radar and autopilot upgrade, to keep them effective and safe to fly.

Conventional roles are receiving increased attention to match' their growing importance. The B-52/Harpoon program provides our near-term effort to meet increased responsibility to provide the U.S. Navy with maritime support. Thirty B-52Gs will be modified to carry the Harpoon missile beginning in Fiscal Year 1984. To enhance the B-52's land attack capabilities, we are pursuing a conventional standoff weapon for use against a variety of high value targets. The Strategic Conventional Standoff Capability (SCSC) program will develop the capability for longer term, broader based conventional missions. SCSC will be developed to ensure that the hardware, as well as the software knowledge we pick up developing this system, will be applicable to both the B-52 and the B-1B.



B-52 Bomber

To eventually replace the B-52s in their strategic role, the President announced in October 1981 a two bomber program consisting of the B-1B using today's technology and the Advanced Technology Bomber using more sophisticated developments in low observables technology. This force will be complemented by a force of cruise missiles. We will produce 100 B-1Bs which will have an initial operational capability in 1986. Acquiring the B-1B enables us to field the additional strategic forces required during a period when the United States must depend heavily on bombers while we take the proper steps to strengthen the intercontinental ballistic missile leg of the strategic Triad. For the far term, the plan is to develop and produce the Advanced Technology Bomber with an initial operational capability in the early 1990s.

As the first component of the President's two bomber program, the B-1B will be capable of performing the tactical and strategic missions of a conventional bomber, a cruise missile launch platform, and a nuclear weapons delivery system. The current program integrates proven technology and state-of-the-art systems. Its ALQ-161 defensive countermeasures system allows the B-1B to counter an evolving electronic threat. In addition, critical long-lead items necessary for initial production, such as forgings, tooling, and materials, are being used from the original B-1A program. The team of personnel managing the program is skilled and experienced.

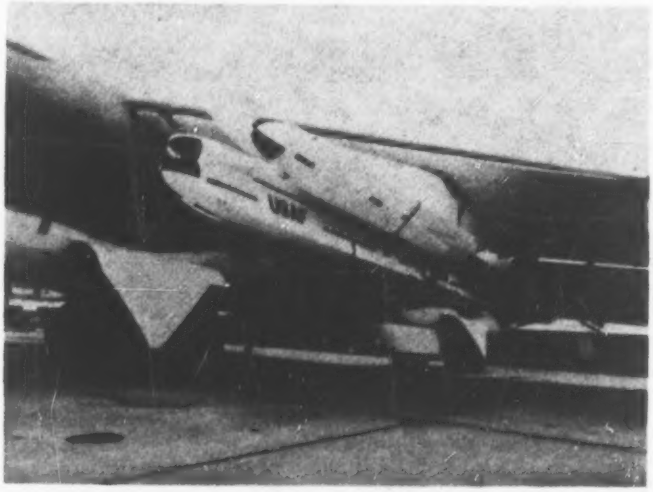
B-1B Bomber

The Fiscal Year 1985 B-1B RDT&E program includes the rollout and first flight of B-1B number 1. We will continue our full scale development efforts with emphasis on flight test, software and hardware development, and integrated logistics support activities. Procurement funds in Fiscal Year 1985 are for the production of 34 B-1B aircraft under multiyear contracts.

The Advanced Technology Bomber (ATB) is the other component of the President's two bomber program. We have selected the prime contractor and key members of the ATB development team. Program start-up is progressing smoothly. The ATB will use low observable techniques to negate present and projected Soviet air defenses. The technologies involved are exciting and promising, but they are still in early development stages.

We are confident that our orderly program to deploy the B-1B while developing an ATB is the most effective and efficient use of our resources for these important contributions to our Nation's defense. This is especially true in that the ATB represents a technological advance of extraordinary military significance. In the 1990s, a combined force of B-1Bs, ATBs and cruise missiles will place maximum stress on Soviet air defenses and provide the United States with a significant and resilient long-term deterrent capability.

Although no additional quantities of Air Launched Cruise Missiles (ALCM AGM-86Bs) are in this year's request, missile production and deployment are continuing in Fiscal Year 1985. These cruise missiles are a major addition to our bomber forces, enhancing their effectiveness against Soviet defenses and increasing coverage of projected targets.



Air Launched Cruise Missile

Three squadrons of B-52Gs equipped with AGM-86Bs are now operational, with a fourth squadron scheduled to be activated in Fiscal Year 1984. All of our development, test and evaluation and follow-on operational test and evaluation has been completed and the Strategic Air Command is in the process of conducting the integrated weapons system operational test and evaluation. Fiscal Year 1985 ALCM production funds are for ALCM support equipment common to the B-1 and the Advanced Cruise Missile program.

The Advanced Cruise Missile (ACM) will provide significantly improved range, survivability, accuracy, and flexibility for our cruise missile force. Last year, we held a competitive source selection and awarded the full scale development contract for the ACM. At the same time, we decided to procure 240 AGM-86Bs to allow for an orderly transition of improved cruise missile technology to our strategic deterrent forces. This approach provides a responsive, long-term contribution to the deterrent effectiveness of our air-breathing forces. This year we are continuing full scale development of the ACM.

The Advanced Air-to-Surface Missile (AASM) is a supersonic, low radar cross section nuclear missile that will supplement and eventually replace the aging Short Range Attack Missile. Technological advances provide the opportunity for major performance improvements compared to the Short Range Attack Missile in a minimum risk development program. AASM will provide the B-1B and the Advanced Tactical Bomber with a single high performance weapon that has the flexibility to strike any target. AASM is a new start in the Fiscal Year 1985 budget.

The Common Strategic Rotary Launcher (CSRL) program will provide integrated internal weapons carriage on current and planned bomber forces by consolidating several rotary launcher requirements into one CSRL. In addition to carrying gravity nuclear weapons and cruise missiles, the CSRL will be compatible with future nuclear and conventional standoff weapons. The CSRL will avoid launcher proliferation and reap the cost, operational, and support benefits associated with a common design. It will also enable us to more effectively employ such new weapons systems as the AASM.

Tanker aircraft are key to making our bomber, general purpose, and airlift forces function effectively. Our major effort is to modernize the KC-135A by replacing the current engines with CFM56 modern technology engines and upgrading 34 other systems. We are also continuing the wing reskin structural modifications to extend the KC-135 service life in line with force structure planning. The modernized KC-135Rs, which have the CFM-56 engines and upgraded subsystems, are an important, cost-effective investment in improved operational environmental and fuel efficiencies. The KC-135R provides the Air Force with a next generation tanker at significantly less cost than procurement of a new aircraft. We have also been modifying Air National Guard KC-135 aircraft to the KC-135E configuration by replacing current engines with the JT3D. Through Fiscal Year 1984, a total of 96 Air National Guard tankers were funded for modification with the JT3D.

STRATEGIC COMMAND, CONTROL AND COMMUNICATIONS (C^3)

Strategic command, control and communications (C^3) encompasses all systems capable of detecting, analyzing and reporting events critical to the survival of our strategic retaliatory forces. Strategic C^3 systems include surveillance systems, command and control centers, and supporting communications. Their main objective is to insure strategic connectivity between our warning sensors, command and control centers and nuclear forces before, during and after an attack.

Deterrence is enhanced if U.S. nuclear forces are perceived by the Soviets as capable of defeating or surviving a first strike. Deterrence is further enhanced if the Soviets believe the United States has the capability to inflict an unacceptable measure of damage upon them, if they decided to strike first. Strategic C^3 systems provide warning to our air defense forces responsible for defending the United States against an attack. They also provide the critical link from the National Command Authority, through the Unified and Specified commands, to U.S. nuclear retaliatory forces.

Because of the importance of strategic C^3, upgrading these systems is the first priority of the President's strategic modernization program. In order to maintain our deterrent credibility, upgrades to these systems must reduce vulnerability by countering physical attack, jamming, spoofing and nuclear effects.

Our current strategic C^3 systems are vulnerable in several respects. Land based systems are susceptible to blast damage, either from a precursor nuclear attack or by sabotage, to jamming and to the effects of electromagnetic pulse generated from a high altitude nuclear explosion. Some of our systems have limited communications capacity to handle increased amounts of data during crisis situations. Our satellite systems suffer from many of the same vulnerabilities.

In addition, the Soviet antisatellite systems pose a physical damage threat to our C^3 space assets. Blackout and scintillation effects due to nuclear events would disrupt C^3 links. While some of our satellites currently have an anti-jam capability, this advantage is gained at the cost of diminished capacity. Finally, our current satellites are heavily dependent upon highly vulnerable ground stations for global data relay.

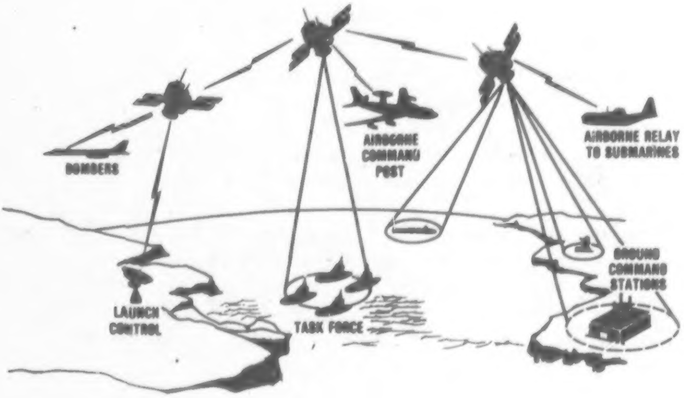
Near term improvements to ground based and satellite strategic C^3 systems are designed to ameliorate or negate the vulnerabilities stated above. Although no one system can achieve all the desired characteristics to meet the current and projected threat, a proper mix of ground based and satellite systems, along with redundancy of critical C^3 links and nodes, will provide high confidence that our strategic C^3 systems will survive and endure through trans- and post-attack phases of a Soviet nuclear strike.

A major initiative of the President's strategic modernization program is the MILSTAR satellite communications system which will provide two-way survivable and enduring secure voice and data connectivity to our decision makers, sensors and forces. The MILSTAR program has been designated by the President as a program of highest national priority.

The MILSTAR program is structured as a survivable, jam-resistant, worldwide communications system for the National Command Authority and the strategic and tactical forces of all services. It will utilize extremely high frequencies, crosslinks, frequency hopping, time shuffling, nuclear and laser hardening and other techniques to attain levels of survivability that will ensure that the minimum essential communications required for war are available.

The system will consist of satellites in 24 hour circular orbits at low and high inclinations; terminals at fixed and mobile command centers, on aircraft, ships and submarines, at missile launch control centers, and similar installations; and proliferated system control equipment on survivable platforms. While we are responsible for developing the satellites, along with the system control equipment and airborne terminals, the Army and the Navy are developing ground and seaborne terminals, respectively. Deployment of the MILSTAR will begin in the late 1980s and continue into the early 1990s.

MILSTAR
SATELLITE COMMUNICATIONS SYSTEM



The Air Force Satellite Communications (AFSATCOM) System provides worldwide, two-way command and control communications today for the President, the Joint Chiefs of Staff, the Commanders-in-Chief of U.S. strategic nuclear forces, and other high priority users. The space segment consists of ultra high frequency communications packages in orbit on board Fleet Satellite Communications satellites, Satellite Data System satellites, and other classified host spacecraft. The terminal segment of this program includes terminals for airborne and ground command centers, strategic bomber and reconnaissance aircraft, airborne communications relay platforms, and selected Army missile sites.

Although developed and deployed for command and control of strategic forces, AFSATCOM is also used in peacetime for training, contingency operations, crisis management, search and rescue, humanitarian missions, and for relay of reconnaissance information and missile testing data.

We began installation in mid-1978 with terminals on Strategic Air Command B-52 and airborne command post aircraft. In December 1983, we achieved full operational capability with over 500 ground and airborne terminals installed and operating.

In Fiscal Year 1985, we will initiate a series of upgrades to AFSATCOM terminals which will provide the means for transition to the MILSTAR satellite communications system. By beginning this effort now, virtually all the AFSATCOM terminals will be capable of using the MILSTAR spacecraft ultra high frequency channels after the first MILSTAR launch. In addition, these modifications will enhance terminal operation in the presence of jamming and improve performance during ionospheric disturbances.

Under the Minimum Essential Emergency Communications Network (MEECN) we are developing the first major communications system, the Ground Wave Emergency Network, to meet the high altitude electromagnetic pulse threat. We are also developing secure very low frequency/low frequency systems and reliable two-way adaptive high frequency communications.

The Ground Wave Emergency Network (GWEN) will complement MILSTAR by providing a survivable and enduring ground based communications capability between the National Command Authority and strategic installations, such as major command facilities, missile warning locations, and U.S. based nuclear forces. The system consists of a network of radio relay stations and user terminals that interconnect these installations.

The GWEN program is separated into three phases--concept development, full scale development, and production. Full scale development began in February 1983 and will continue through early 1986. The prototype network includes relay stations, input and output ground and airborne terminals, and receive only terminals. During Fiscal Year 1985, we will complete installation and most of the system level testing for the prototype network. Following a review of the test results, we will conduct initial operational test and evaluation and, based on those results, make a decision to begin production in 1986. Full operational capability is planned for Fiscal Year 1989.

Our MEECN very low frequency/low frequency (VLF/LF) Improvements project provides for improved dissemination of war orders through secure VLF/LF Systems. In Fiscal Year 1985, we are continuing the development of the diversity reception equipment for Worldwide Airborne Command Post aircraft and Minuteman Launch Control Centers and aircraft wing command posts. Also, development will continue for the VLF/LF miniature receive terminals for bomber aircraft. The diversity reception equipment will replace the existing MEECN transmit and receive equipment in ground and airborne applications. It will provide improvements in connectivity, message accuracy and transmission time. The miniature receive terminals will provide a high confidence strategic communications link for the B-1B, B-52H, and FB-111 aircraft.

In addition to these VLF/LF improvements, the MEECN adaptive high frequency (HF) communications program will provide a modular family of radios which will improve the reliability of two-way communications in a nuclear or jamming environment. In Fiscal Year 1985, we plan to go into full scale development for adaptive HF radios.

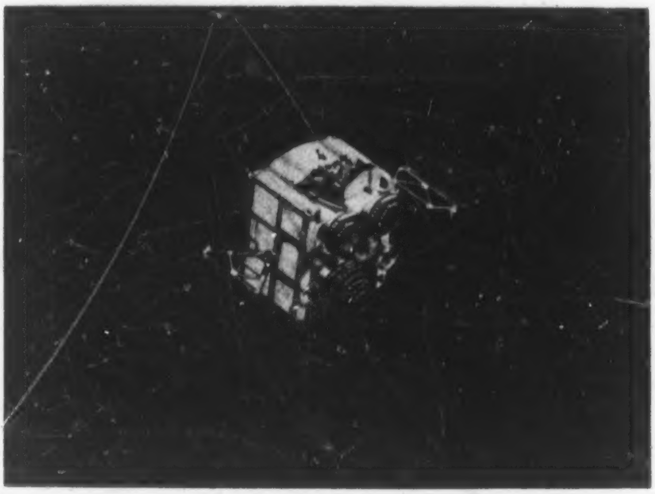
The Strategic Air Command (SAC) must currently rely on 1950s vintage communications equipment to support its critical command and control needs. This equipment has limited capacity, requires interconnection with expensive and vulnerable leased communication circuits and is becoming ever more difficult to keep operational. Under the SAC Communications program, we are developing the Aircraft Alerting Communications Electromagnetic Pulse upgrades and the SAC Digital Information Network.

In order to extend the electromagnetic pulse protection provided by the Ground Wave Emergency Network for emergency action communications equipments, the Aircraft Alerting Communications Electromagnetic Pulse (AACE) upgrade program will provide shielded enclosures for selected equipment at Strategic Air Command main operating bases in the continental United States. The screen rooms and associated interface consoles will also protect the communications equipment used to relay critical action messages from the command post to bomber crews in the alert facility or in the cockpit. In Fiscal Year 1984, we will undertake AACE full scale development. In Fiscal Year 1985, we will begin development test and evaluation of a prototype AACE system. If the results of the subsequent operational test and evaluation are satisfactory, we will purchase 23 AACE production units in 1985 and install them during 1986 and 1987.

The Strategic Air Command Digital Information Network (SACDIN) will use new programmable communications processors tied together in a switchable common-user network, and will provide a more reliable system of sufficient capacity to meet Strategic Air Command's needs, especially during peak traffic loads expected during a crisis. In Fiscal Year 1985, the Air Force will be well underway in producing and fielding SACDIN equipment, with an initial operational capability planned for 1985. SACDIN full operational capability is planned for 1987.

The Defense Satellite Communications System (DSCS) is an evolutionary Department of Defense system deployed to provide super high frequency satellite communications for secure voice and high data rate transmissions. DSCS provides unique and vital national security communications for worldwide military command and control, crisis management, intelligence information, and Presidential and diplomatic traffic.

In Fiscal Year 1985, our major DSCS RDT&E tasks are to complete first time integration of the DSCS III production satellites on the Shuttle and Inertial Upper Stage, and to complete the development of approved planned product improvements for the production satellites. Compared with DSCS II, DSCS III will provide more electromagnetic pulse hardening, increased jam-resistance and greater capacity. The DSCS III satellite also has greater flexibility and electronic counter-countermeasure capability. DSCS III will support strategic forces through the Single Channel Transponder, which incorporates an ultra high frequency and super high frequency capability for emergency action message dissemination and force execution.



Defense Satellite Communications System

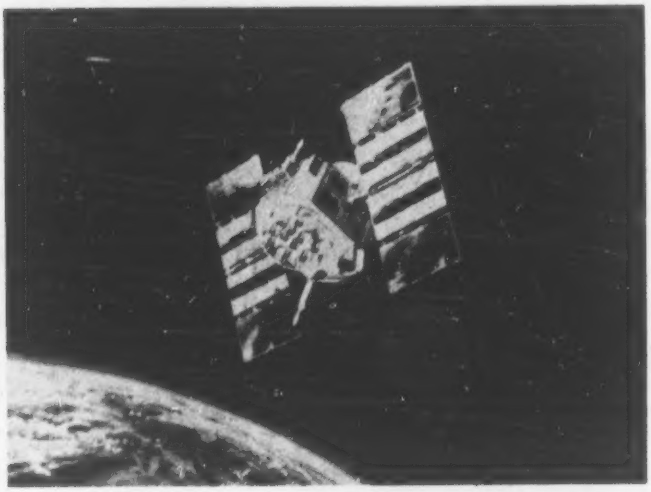
The DSCS procurement program will replace DSCS II satellites with DSCS III satellites. Five production DSCS III satellites have been procured through Fiscal Year 1983. In Fiscal Year 1984, we initiated an advance buy of parts as a multiyear procurement for the final seven DSCS III satellites. In Fiscal Year 1985, we will continue the multiyear procurement and produce the first two of the remaining seven DSCS III satellites; we will also initiate the economic order quantity procurement of all remaining parts and subassemblies for the seven satellites.

The Defense Meteorological Satellite Program (DMSP) is the Department of Defense's single most important source of weather data. The program is a joint service program with the Air Force serving as executive agent. In addition to supplying weather, environmental and oceanographic data to Air Force units, the data are supplied to Navy land and carrier based stations and Marine Corps transportable terminals.

In Fiscal Year 1985, we will be in the third year of a multiyear procurement of four spacecraft and imaging sensors. The contracts were negotiated at the multiyear procurement estimate and are proceeding well. The major RDT&E effort will be the continued design and development of a Space Shuttle qualified imaging sensor and the initial development of a Shuttle qualified spacecraft. In the terminal area, the program will continue production of new advanced fixed and mobile tactical transportable weather terminals for the Air Force and Marine Corps. Another development is the enhancement of the Satellite Control Facility antenna system at the Thule, Greenland tracking station to additionally receive and transmit DMSP command and control signals. This combining of functions will allow closure of the dedicated DMSP facility near Loring Air Force Base, Maine in the late 1980s.

Defense Meteorological Satellite Program

The NAVSTAR Global Positioning System (GPS) will become the Department of Defense's navigation system of the 1990s. GPS is a space-based radio navigation system which will provide users with all-weather, three-dimensional position, velocity, and precise time. GPS will provide a worldwide common navigation grid for land, air, and sea units to dramatically enhance coordinated operations. GPS will significantly improve the probability of target acquisition, low-level navigation to and from the target, flexible routing and, most importantly, the accuracy of weapons delivery. This, along with a capability for highly accurate passive operations, increases weapon system survivability and effectiveness.



NAVSTAR Global Positioning System

In Fiscal Year 1985, we are requesting funds for six of the multiyear procurement of 28 GPS satellites, as well as limited survivability enhancements. We will also complete the development of the user avionics, continue their integration into military weapons systems, and complete testing of the satellite qualification test vehicle. Also included is the continued funding of the five-satellite R&D constellation to support mapping, missile testing and avionics integration testing.

A trans-attack and post-attack assessment capability will be provided when the Integrated Operational Nuclear Detonation Detection system (IONDS) becomes operational in Fiscal Year 1988. IONDS payloads will be carried on NAVSTAR GPS satellites. These sensors will report nuclear detonation location, time and yield in near-real-time directly to user terminals.

They will allow us to better manage our forces by providing indications of which resources, both friendly and enemy, have been destroyed, aiding the recovery and reconstitution of our forces. In Fiscal Year 1985, we plan to continue development of the IONDS user terminal and procurement of the operational GPS/IONDS satellites.

The EC-135 airborne command post provides an airborne operations center to support continued command and control capability of our nuclear forces. These aircraft, along with the E-4B, National Emergency Airborne Command Post aircraft, form the basis of the Worldwide Airborne Command Post system.

The Strategic Air Command EC-135 airborne command post aircraft support the Post Attack Command and Control System, which is the link between the National Command Authority and our nuclear reserve forces in a post attack environment.

With the increasing age of the EC-135 aircraft and the increased national emphasis on strategic communications capabilities, the Air Force has developed plans to modernize the aircraft. A major by-product of this modernization will be increased maintainability and improved capability to operate in a nuclear environment.

Major modifications planned for the aircraft in Fiscal Year 1985 include the ultra high frequency/frequency division multiplex replacement, the AFSATCOM Secure Voice System and new high frequency radios. Other enhancements to be programmed in subsequent years include MILSTAR, the Ground Wave Emergency Network, improved diversity reception equipment, installation of the Integrated Operational Nuclear Detonation Detection System terminals, and the Automated Digital Information System. Additionally, several modifications are planned including the Peacekeeper C^3 upgrade for the Strategic Air Command.

Also in Fiscal Year 1985, we will complete the retrofit of the E-4A to E-4B Advanced Airborne Command Post aircraft. In addition, there are several modifications planned for the E-4B including improvements in the current E-4B communications equipment as well as some of those previously mentioned for the EC-135. For the future, we are currently preparing an acquisition plan and conducting tradeoff studies for a Worldwide Airborne Command Post replacement system.

STRATEGIC DEFENSE

Another integral part of our strategic deterrent posture is our strategic defense forces and systems. These vital forces enhance the survivability of our offensive forces and protect key elements of our military, political, and economic power base. They ensure that our strategic retaliatory capability survives a Soviet first strike by providing timely, reliable, and unambiguous warning, as well as assessment and defense.

Atmospheric warning and defense systems are required to defend against bomber and cruise missile strikes; missile surveillance and warning systems are required to provide warning and limited assessment of intercontinental ballistic missile and submarine launched ballistic missile attacks; and space surveillance and defense systems are required for warning and verification of, and defense against, attacks on U.S. systems in space.

Atmospheric defense of North America is a cooperative U.S. and Canadian effort. The primary mission of strategic air defense forces is to provide timely, credible tactical warning and defense against enemy bombers, air-to-surface missiles and cruise missile attacks. These surveillance and defense forces also control access to North American airspace in peacetime.

Current U.S. surveillance and defense systems against an atmospheric threat are largely a product of the 1950s and have been significantly reduced in numbers over the years. Those systems which remain were designed against a medium to high altitude bomber threat. Against today's low altitude bomber threat, these systems are extremely limited. They provide little low altitude detection coverage. They provide very limited long range surveillance and have little survivability.

The current surveillance systems consist of the Distant Early Warning Radar Stations across northern Alaska, Canada and Greenland, and the Joint Surveillance System radars. The latter includes the radars around the periphery of the continental United States, radars in Alaska, and the Continental Air Defense Integration North Pinetree radar stations across Southern

Canada. Command and control of fighter forces is provided by the Joint Surveillance System Region Operations Control Centers and the E-3A.

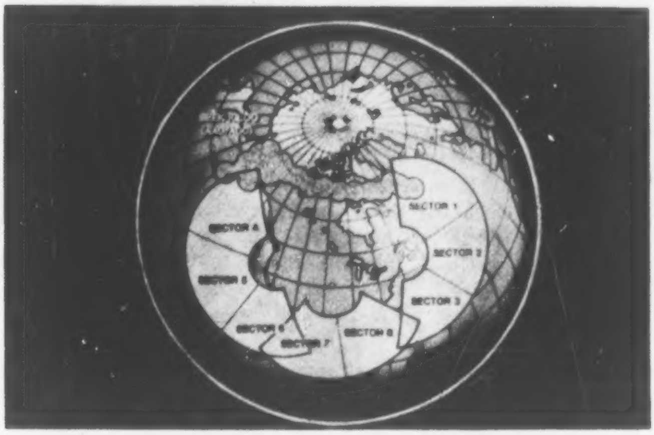
The Soviet threat is growing in numbers and capability with the introduction and continued production of BACKFIRE bombers and improved air-to-surface missiles. Soviet BEAR bombers, long thought to be on their way out, are being modified to carry cruise missiles. In fact, new BEAR bombers are being produced that are estimated to be able to carry cruise missiles. In addition, a new strategic bomber which is similar to but larger than our B-1B, called the BLACKJACK, is expected to become operational during the 1980s; it will also have a cruise missile capability.

More significant is the development and estimated deployment of cruise missiles by Fiscal Year 1984 or 1985. The cruise missile, capable of being carried by both aircraft and submarines, is the most severe threat to our capability to ensure atmospheric tactical warning to the National Command Authority. Given this growing threat, more capable U.S. atmospheric surveillance and defense systems are necessary to preclude vulnerability to a no-warning bomber or cruise missile attack, as well as to limit damage from follow-on bomber strikes.

As part of the President's strategic modernization program, the Department of Defense developed a North American Air Defense Master Plan in 1982 to guide improvements and modernization of air defense forces. Our first major initiative to improve air surveillance and warning is the development and deployment of Over-the-Horizon Backscatter radars and replacement of the existing Distant Early Warning radars.

The Over-the-Horizon Backscatter (OTH-B) Radar will correct many surveillance deficiencies by providing long range, all altitude, wide area warning of attack from the east, west and south. In Fiscal Year 1985, the Air Force will continue the deployment of the East Coast Operational Radar System and procure the third 60 degree surveillance sector (Sector 3) for the East coast system, as well as initiate procurement of the first 60 degree surveillance sector (Sector 4) for the West coast system. The remaining two West coast sectors (Sectors 5 and 6) will be procured in Fiscal Year 1986. In addition, the Air Force is planning to deploy a south looking OTH-B radar in the late 1980s (Sectors 7 and 8).

NORTH AMERICAN AIR SURVEILLANCE SYSTEM



In the north, the existing line of Distant Early Warning (DEW) radar stations will be replaced to provide credible long range all altitude coverage to complement OTH-B surveillance. The 31 existing DEW radars, which are old and difficult to maintain, will be phased out and replaced with a total of 52 radars: thirteen long range minimally attended radars and 39 short range unattended radars. In Fiscal Year 1985, the remainder of the long range radars will be procured, communications upgrades will begin and development testing of the short range radar will continue. Both the OTH-B and improved DEW radars will provide a capability to detect and track long range cruise missiles; however, they are not intended to survive a nuclear attack.

Other significant improvements include additional F-15s for air defense, E-3A Airborne Warning and Control System (AWACS) procurements, and F-16s for strategic defense. With its long-range radar and look-down, shoot-down capability, the F-15 will substantially improve our air interceptor force. The Air Force is converting four active F-106 air defense squadrons to F-15s. The F-16, modified to carry the all weather Advanced Medium Range Air-to-Air Missile, will be used by the Air National Guard for strategic defense. The E-3A is essential to ensure survivable surveillance and to meet command and control requirements. These programs will greatly enhance our defense against bombers and cruise missiles.

F-15 Air Defense Fighters

Beyond 1990, the emphasis in air surveillance will be to deploy survivable ground-based and space-based systems. In Fiscal Year 1985, as part of the Missile Surveillance Technology program, the Air Force will begin development of critical technology for space-based detection of cruise missiles. The joint Air Force and Navy program for a space-based radar and infrared system will continue concept definition to meet the wide area atmospheric surveillance needs of the 1990s.

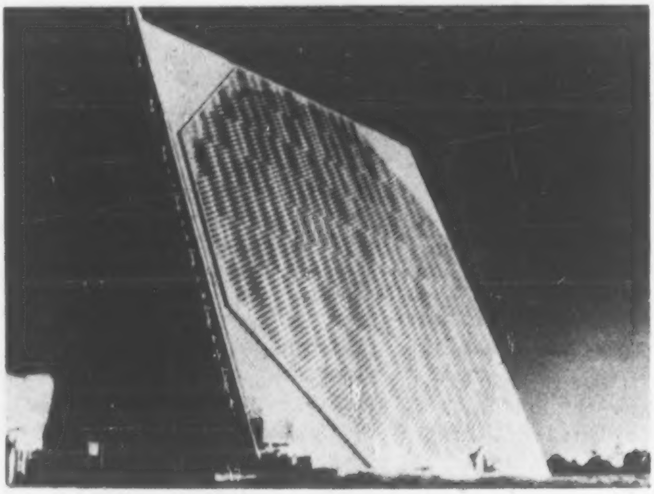
Ballistic missile attack warning and assessment are currently accomplished by space satellite systems, three Ballistic Missile Early Warning System sites, the Perimeter Acquisition Radar Attack Characterization System (PARCS) radar, two PAVE PAWS submarine launched ballistic missiles detection and warning sites on the east and west coasts, and the AN/FPS-85 and AN/FSS-7 submarine launched ballistic missile radars in Florida.

These systems provide surveillance of all fixed Soviet intercontinental ballistic missile launch areas and observed ballistic missiles submarine patrol areas in the northern hemisphere. They also provide some limited attack assessment. The growing Soviet submarine launched ballistic missile threat requires the United States to modernize its existing radars and expand radar deployments to cover attacks from all directions, especially from the Southeast and Southwest.

We are upgrading our surveillance and warning systems, as a part of the President's strategic modernization plan and to meet our national requirements for accurate and timely missile warning and attack assessment data. To minimize potential escalation of a limited war, we must be able to assess the magnitude and scope of an attack so that we can select an appropriate and effective response.

In response to the expanding Soviet submarine launched ballistic missile (SLBM) threat, we are deploying two additional PAVE PAWS radars in the southeastern and southwestern United States. These deployments, along with the PARCS Radar and the two existing PAVE PAWS sites, will complete the planned five site phased array SLBM radar warning network, will close gaps in coverage, and enable us to phase out the older, less capable AN/FPS-85 and AN/FSS-7 SLBM radars in Florida.

In Fiscal Year 1985, efforts will continue on the deployment of the new PAVE PAWS radar at Robins Air Force Base, Georgia and Goodfellow Air Force Base, Texas. In Fiscal Year 1986, we plan to further enhance the capability of the Robins radar to track satellites and provide improved warning capability. Similar warning capability improvements will be added to the Otis and Beale Air Force Base radars in 1987.



PAVE PAWS Radar

The Ballistic Missile Early Warning System (BMEWS) modernization program is replacing existing 20 year old conventional radars at the Thule, Greenland site with a new solid state phased array radar. This will greatly reduce the danger of the system becoming saturated in a dense attack and will allow it to provide better pre-impact assessment. In Fiscal Year 1985, we will continue systems engineering and software development for the new Thule radar.

Our Ballistic Missile Tactical Warning/Attack Assessment System develops and maintains the overall architecture for current and programmed systems to ensure that individual warning and attack assessment elements operate coherently as an integrated system. The program also provides a formal mechanism to assure that modifications to systems are certified as operational prior to declaring initial operational capability.

For the far term, we are continuing to pursue technology for an advanced surveillance system for improved long-term survivable warning and attack assessment. Infrared data on earth background and ballistic missile signatures are now being collected and analyzed in the Missile Surveillance Technology (MST) program. In Fiscal Year 1985, we will assess data on cruise missile surveillance.

Our longer term efforts supports development of required technologies and designs for an Advanced Warning System (AWS) program. As an element of the President's Strategic Defense Initiative, the AWS will provide a survivable strategic missile warning capability for the 1990s, with growth capabilities to communicate information to battle manager and subsequent layers of other defense systems. In Fiscal Year 1985, we will continue AWS concept definition.

Our current space surveillance system is composed of three Ground-based Electro-Optical Deep Space Surveillance (GEODSS) stations and a number of dedicated and contributing radar stations. Against today's threat these systems require improved low altitude coverage, high altitude detection capability and reporting of space events in a timely manner. The current command and control functions provided by the North American Aerospace Defense Command Combat Operations Center are essentially manual and require improvements to support coordinated or integrated responses to potential military conflicts.

Our space surveillance and space defense programs will improve surveillance, increase survivability, develope an antisatellite system and enhance selected C^3 elements.

The SPACETRACK program focuses on improving our ability to monitor space activities. Surveillance is the key to our warning and defensive options, and we are pursuing several near-term efforts to upgrade our surveillance capability in our SPACETRACK program. In Fiscal Year 1986, we will begin testing at the GEODSS site in Diego Garcia; that site will become operational in Fiscal Year 1987. A five site GEODSS system providing global deep space surveillance will be completed in Fiscal Year 1988. Other improvements to our SPACETRACK capability include refurbishment of radar sensors and implementation of an improved radar calibration capability to provide future support to our antisatellite system.

For the far term, the thrust of our space surveillance technology effort under the President's Strategic Defense Initiative is to develop a space-based space surveillance (SBSS) system which will provide full earth orbit coverage, reduce dependence on overseas basing of sensors and provide timely, operationally responsive coverage of objects and events in space. Our efforts will be meshed with other related work under the Strategic Defense Initiative. In Fiscal Year 1985, we will complete a program to gather infrared background data needed for the SBSS system. We will also continue SBSS system concept definition, along with technology demonstrations to support the final SBSS design and development. Concept definition includes consideration of ballistic missile midcourse surveillance requirements so that the SBSS system could satisfy a range of strategic surveillance missions.

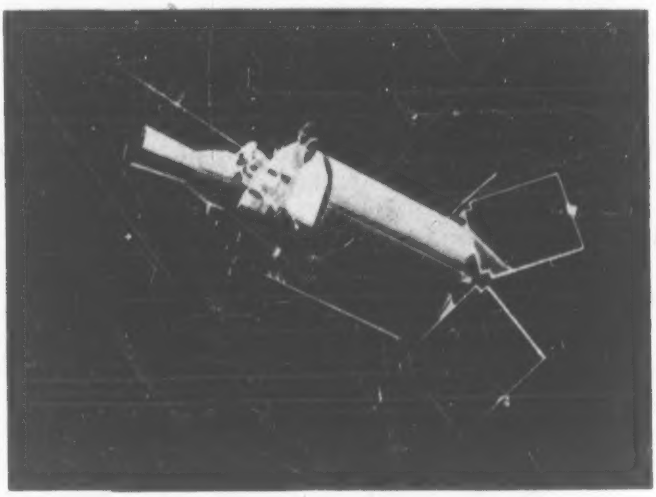
The Soviets' enormous potential for electronic intervention, coupled with their demonstrated antisatellite capabilities, require that we take prudent steps to defend our satellites. In the Satellite Systems Survivability program, we are developing technology and procedures which can be used to increase the survivability of our satellites along with their communication links and ground stations. These efforts to implement a space systems survivability are consistent with the strategy and policy developed under the Air Force Space System Architecture. In Fiscal Year 1985, we will continue these efforts to develop long-term survivability requirements.

The Space Defense System program is continuing the development of an operational antisatellite capability to deter Soviet antisatellite use and, if necessary, to enable us to negate hostile space systems that provide support to hostile military forces. In Fiscal Year 1985, partial testing of the low-altitude, air-launched miniature vehicle antisatellite capability will be followed by production.

Command, control and communications are vital to effective integration, coordination, and management of all space defense resources. The North American Aerospace Defense Cheyenne Mountain Complex Space Defense Systems program will develop the Space Defense Command and Control System in a phased approach to support the evolving space defense elements. During Fiscal Year 1985, the Space Defense Operations Center phased development will continue. A fully automated capability is being developed to support our space surveillance and space defense program.

The Defense Support Program (DSP) is a key element of our nation's strategic defensive posture. This program provides data to the National Command Authority, North American Aerospace Defense Command, and Strategic Air Command. Our development efforts are aimed at increasing the survivability of operational data by designing ground station modifications for compatibility with the survivability improvements of follow-on satellites, and ensuring that these satellites are compatible with the space shuttle.

To maintain the operational capability of this vital system, new satellites must be procured to replace those that have failed, worn out, or are unable to meet the growing threat. To meet near-term requirements, four DSP satellites have been procured, two in Fiscal Year 1983 and two in Fiscal Year 1984. In Fiscal Year 1985, we will continue integration of DSP satellites in the space shuttle and continue ground station compatibility modifications. In addition, we will complete testing on all mobile ground terminals.



Defense Support Program Satellite

President Reagan's Strategic Defense Initiative, announced to the nation in March 1983, calls for a research program to counter the Soviet ballistic missile threat with measures that are defensive. In response, the Department of Defense is defining a long term research and development program to explore the key technologies needed for an effective ballistic missile defense.

The ultimate goal of the program is to develop a base of proven technology that can lead to a defensive system that will destroy Soviet ballistic missiles during their launch and boost phase and reentry vehicles during the mid-course and terminal phases of their flight.

The Strategic Defense Initiative research and development program is focused on technology development in areas that cover all aspects of a future multi-layered defense system such as surveillance and tracking, weapons, systems analysis and battle management, command, control and communications, and system support. In Fiscal Year 1985, several ongoing Air Force programs will be integrated into the Strategic Defense Initiative, being managed by the Office of the Secretary of Defense. Future Air Force efforts to develop ballistic missile warning, space surveillance, and space and ground-based laser technologies will be conducted under the Strategic Defense Initiative to meet a broader range of national mission requirements.

During the 1980s, experiments and demonstrations will be conducted to assess the feasibility of applicable technologies and to support development decisions in the 1990s. By pursuing a vigorous research and development program, the United States could have an opportunity to deploy a highly effective system in the early years of the 21st century.

SPACE LAUNCH AND OPERATIONS

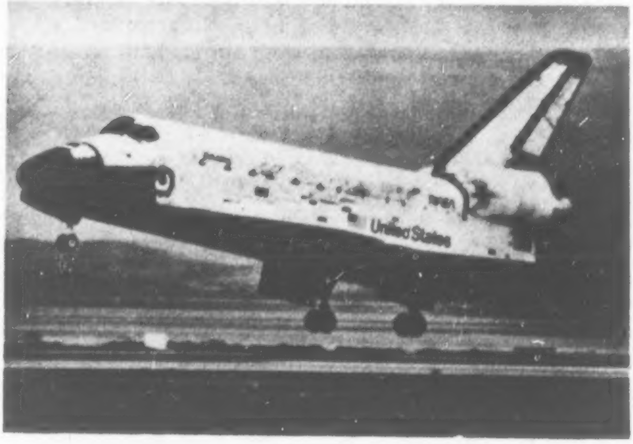
To support U.S. space operations an infrastructure of launch and on-orbit control facilities is required. Space systems have become an integral part of our military forces and survivability of that infrastructure has become a critical part of our planning and development activity.

The Space Transportation System (STS) is a national program approved by the President in 1972 to provide U.S. Government and commercial users, as well as foreign users, routine access to space. The STS consists of the Space Shuttle, upper stages, Spacelab, launch and landing facilities, and mission control facilities. The National Aeronautics and Space Administration (NASA) is responsible for developing and operating the Shuttle.

The Air Force is the Department of Defense executive agent for military applications of the Shuttle and is responsible for: developing and operating the Inertial Upper Stage (IUS); jointly developing with NASA a common short Centaur G upper stage; acquiring and operating the Western Launch Site at Vandenberg Air Force Base; and acquiring and operating the dedicated military control center, the Consolidated Space Operations Center. Our Fiscal Year 1985 research, development, test and evaluation (RDT&E) and procurement funding requests in the Space Shuttle program are required to continue activation of the Vandenberg Air Force Base launch site and to complete recovery actions to fix problems identified in the initial IUS Shuttle flight.

Construction of the Vandenberg Air Force Base launch facility is progressing on schedule for a first launch in 1985. The IUS was launched twice in Fiscal Year 1983. The first was an extremely successful mission aboard a Titan III (34)D launch vehicle. Unfortunately, the second launch was an unsuccessful mission aboard the Shuttle. The IUS did not place the NASA-sponsored Tracking Data Relay Satellite (TDRS) into its mission orbit.

Through a series of satellite thruster firings, NASA was able to reposition the TDRS into the correct orbit; we expect no degradation to the projected life of the satellite as a result of this IUS anomaly. We believe we have identified the problems with the IUS and are aggressively implementing fixes to make the IUS flight-ready again. We expect to resume normal launch operations in the summer of 1984.



Space Shuttle

Our Space Launch Support Program funds Department of Defense Shuttle operations including Vandenberg Air Force Base, the orbiter flight charge reimbursements to NASA, and procurement of the Centaur, IUS, and Payload Assist Modules Delta Class (PAM-D) payload vehicles for all Air Force space programs. The Centaur supports 10,000 pound class payloads, the IUS 5000 pound, and the PAM-D 3000 pound. In Fiscal Year 1984, procurement funds are being used to continue the PAM-D multiyear procurement in support of the NAVSTAR GPS program, to modify IUS vehicles as a result of the IUS anomaly, and to provide logistics support for the IUS and Vandenberg launch sites.

Our Fiscal Year 1985 procurement request will be used to continue the PAM-D block buy, to initiate long lead procurement of two IUS vehicles to be fully funded in Fiscal Year 1986 and to continue logistics support activities. Our Fiscal Year 1985 RDT&E request will be used to complete an IUS vehicle and to prepare for the procurement of one Centaur vehicle to be funded in Fiscal Years 1985, 86, and 87 for the MILSTAR program. Our decision to use the Centaur for the MILSTAR program is based on the need for payload performance margins which cannot be provided by the IUS.

Our Space Boosters program procures and launches Titan III (34)D Expendable Launch Vehicles (ELVs) and refurbishes and launches Atlas E ELVs for this purpose. We terminated Titan III production in Fiscal Year 1983 after the successful initial operational capability of the Space Shuttle. We will continue to launch our remaining ELVs to meet our scheduled requirements. The last Titan III is scheduled for launch from Cape Canaveral Air Force Station in Fiscal Year 1985 and from Vandenberg Air Force Base in Fiscal Year 1988. The last Atlas E will be launched in Fiscal Year 1989. Because of our need for assured access to space, in Fiscal Year 1985 we will continue integration studies of Department of Defense unique launch requirements, including use of commercial ELVs and heavy-lift vehicles to supplement the shuttle.

The Air Force provides some on-orbit control for Department of Defense satellites from the Satellite Test Center (STC) at Sunnyvale Air Force Station, California, through a worldwide network of seven geographically dispersed tracking stations. The current computer system in the Satellite Test Center is obsolete and its continued use will severely limit our current operations.

In Fiscal Year 1985, we will continue development and acquisition of the Satellite Control Facility (SCF) Data System Modernization program, which will correct operational limitations, give us the ability to operate the more sophisticated satellites now in development, and form the core configuration for operations at both the Satellite Control Facility and the Consolidated Space Operations Center. Data System Modernization computers will be installed in the Consolidated Space Operations Center for the complementary satellite operations there. Our Fiscal Year 1985 funds will also continue development and acquisition of the Advanced Remote Tracking Station which will replace or refurbish the existing remote tracking stations and complement the Data System Modernization.

Our Fiscal Year 1985 request allows us to continue work on the new Consolidated Space Operations Center (CSOC). For management, operational and economic efficiencies, CSOC combines two major space missions for the Department of Defense-- satellite control and Space Shuttle military operations. The CSOC consists of a Satellite Operations Complex, which will share part of the satellite control workload with the Satellite Test Center, and a Shuttle Operations and Planning Complex, which will provide flight planning and readiness support, and conduct operations for military Shuttle missions.

In the role of satellite control, the CSOC will enhance our operational capabilities by providing greater mission flexibility and increased survivability. The Satellite Test Center and the CSOC will provide mutual emergency backup for mission essential functions should outages occur at either center. In its Space Shuttle role, the CSOC will directly control the Department of Defense Shuttle missions, and provide enhanced security protection. During early Shuttle operations, control of Department of Defense Shuttle missions will be performed by the NASA Shuttle control facility at Johnson Space Center. As the CSOC becomes operational, it will relieve the Johnson Space Center of full launch responsibility of the increased space shuttle flights. Survivability will also be increased by having two facilities, with Johnson Space Center serving as the backup to CSOC for Department of Defense missions.

In Fiscal Year 1985, the CSOC Technical Building and the Central Plant will be completed and the remaining facilities will be nearing completion. RDT&E and procurement funds will continue acquisition of technical systems for satellite and Shuttle control, network communications, the operations command center, and support training programs. Some of the procurement funds will also be used to purchase the initial logistics spares to support the scheduled start of live CSOC operations beginning in Fiscal Year 1986.

We are committed to maintaining the technical superiority of our space systems by testing new concepts and by investigating the effects of the space environment on our systems. The tri-service Space Test Program (STP) supports this objective by providing spaceflights for Department of Defense research and development experiments that gather information critical to the development of future space systems, including development of the Shuttle as a manned space laboratory. Fiscal Year 1985 STP funding supports the spaceflight of three primary experiment missions and 15 secondary payloads including some that will be performed on the aft flight deck and mid-deck of the Shuttle.

There is a range of military missions which will require the capability of manned operations in transatmospheric and low earth orbit regimes. In Fiscal Year 1985, we plan to conduct alternate configuration studies against military mission requirements to define those limiting technologies that must be developed if we are to obtain the capability to conduct transatmospheric and orbital missions. Our Advanced Military Spaceflight Technology program will develop these and other technologies, making them available for a military spaceflight system in the mid 1990s.

SECTION III

READINESS AND SUSTAINABILITY

In our Fiscal Year 1985 budget submission, we continue to place priority emphasis on improving the combat preparedness and staying power of our forces. Investments in readiness and sustainability will ensure that our forces are ready for combat on short notice and capable of sustained military operations should deterrence fail.

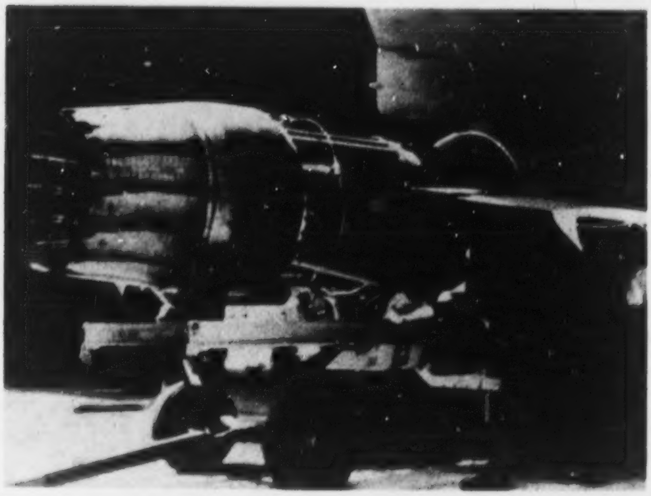
This section discusses aircraft and missile spares and repair parts, simulators and trainers, modifications, war consumables, and aircraft common ground equipment. However, these items represent only some of our readiness and sustainability needs. Additional requirements, such as ammunition, bombs, bare base equipment, vehicles, fuel, other procurement equipment spares and repair parts, depot maintenance and military construction, are reflected in other appropriations.

The availability of spare parts is the most significant determinant of Air Force readiness and sustainability, and historically the greatest limiting factor. Following the conflict in Southeast Asia, the Air Force faced declining budgets and the need to modernize and increase force structure. The introduction of new aircraft weapon systems was accomplished at the expense of not fully funding our spares accounts. Shortfalls developed and the adverse impact on military operations increased significantly. As these new assets entered the inventory, our replenishment spares requirement began to grow; at the same time, inflation and lower weapons system quantity buys caused the price of spares to spiral upward. Consequently, funds programmed for spares in the early 1980s were inadequate because of both the growth in requirements and the increase in weapon system prices. Beginning in Fiscal Year 1981, the Air Force established readiness and sustainability objectives and funded these objectives in its budget. Although the Air Force clearly emphasizes the funding of spares, we are still living with the legacy of underfunding.

AIRCRAFT AND MISSILE SPARES AND REPAIR PARTS

Adequate funding of aircraft and missile spares is vital to peacetime readiness and wartime sustainability. Our spares procurement program consists of two distinct elements--initial spares and replenishment spares.

Initial spares include items peculiar to a weapon system that are required to support early operations of newly delivered aircraft and missiles. The initial spares account also funds all spare engine requirements, initial support of simulators, modifications, and ground support equipment. The funding required for initial spares is directly related to the number and complexity of the weapon systems and modification programs being introduced. Included in this request are spare parts, engines, and modules for F-15 and F-16 fighters, the cornerstones of our tactical forces. In addition, our Fiscal Year 1985 request includes emphasis on the B-1B, the Peacekeeper, and C-5B programs.



F100 Engine

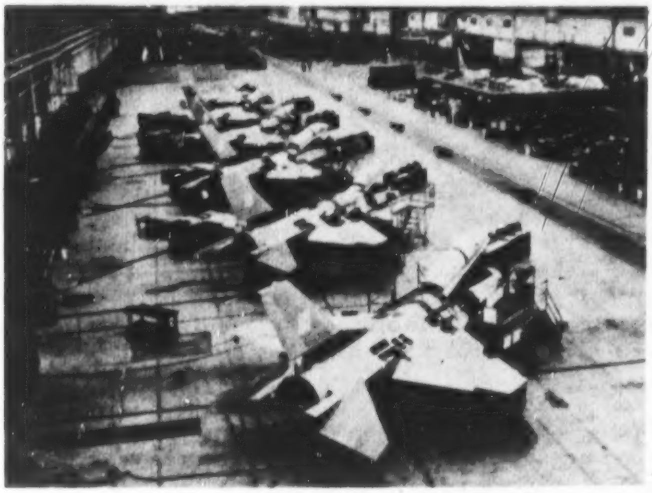
Replenishment spares are required to provide continuing support for the life of our weapons systems. We divide our replenishment spares into two categories--Peacetime Operating Stock and War Reserve Material which includes War Readiness Spares Kits/Base Level Self-Sufficiency Spares, and Other War Reserve Material.

Peacetime Operating Stock supports the peacetime objectives of the Air Force to train our combat forces, support day-to-day operations and ensure our weapon systems are ready to perform their wartime mission.

War Reserve Material (WRM) are mostly the same items as Peacetime Operating Stock except the stockage requirements are higher to support wartime levels of activity. WRM inventory is comprised of two segments, prepositioned and prestocked. The prepositioned segment is identified as War Readiness Spares Kits/Base Level Self-Sufficiency Spares (WRSK/BLSS) and is required to be in position before hostilities break out to ensure timely support of designated forces. WRSK/BLSS are the stocks the Air Force uses to transition to wartime operations and to fight for the first 30 days. WRSKs are air transportable packages maintained by units to be deployed during the first 30 days of a war or contingency. BLSS are stocks designed to augment existing peacetime assets to support the initial increased wartime activity for specfic units that will fight the war in-place.

The prestocked segment, called Other War Reserve Material (OWRM), is required to sustain the forces at wartime levels after prepositioned WRSK/BLSS stocks are exhausted and until production capacity can satisfy wartime consumption, and our defense industrial base can be mobilized.

Continued support for the aerospace defense industrial base is also necessary. The industrial base's continued productivity increases will lead to less costly, higher quality, and more reliable weapons systems. Selected government investment and other incentives will stimulate contractor re-capitalization for modernization. This, in turn, will increase the capability and capacity for industrial surge and sustainability for military material resource requirements.

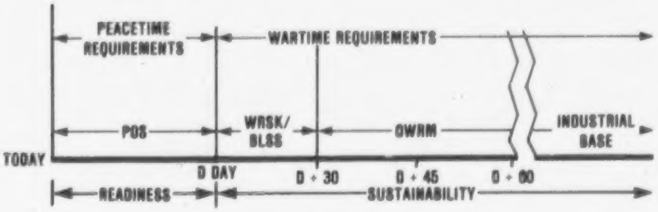


F-16 Production Line

The following figure provides a general idea of the relationship between readiness and sustainability. Readiness is the capability of forces, units, weapons systems, and equipment on-hand to accomplish assigned missions. It is achieved through realistic operational training, maintaining elements of the force at a high proficiency level, and ensuring each unit has sufficient spares to begin combat. Readiness is the basis of our capability to meet the wartime requirement. It is important to note that the steep incline in the readiness side of the chart is a materiel generation period required to bring our forces to a combat ready posture. To achieve this posture, withdrawals from our war reserve material inventory are necessary. Since war reserve material is intended for wartime sustainability these withdrawals impact on sustainability, unless they can be replaced through industrial surge and mobilization.

READINESS & SUSTAINABILITY

(CAPABILITY PHASES)



Sustainability is the "staying power" of our forces to fight during and beyond the initial period of combat. Sustainability is our ability to replace those resources consumed or attrited during combat by having the ability to generate adequate spares, supplies, munitions, and fuel. Sustainability is a function of peacetime stocks, the support infrastructure, war reserve material, and industrial production.

Our aircraft replenishment spares budget request in Fiscal Year 1985 represents a balanced approach between modernization and improvements to readiness and sustainability. We are improving our methods of forecasting the funds required to support our spares requirements in the year of execution. With this budget request, we expect to make progress toward correcting our previous spares shortfalls as we progress toward achieving the full combat potential of our weapon systems.

Our missile spares and repair parts have received an adequate level of funding in the past several years, and as a result, we have continued to enjoy high mission capable rates in the missile program. Continued Congressional support is vital to the progress we have made in upgrading logistics support to our missile forces and maintaining high mission capable rates.

SPARE PARTS ACQUISITION

The Air Force is aggressively implementing the Secretary of Defense's ten-point program to increase competition and to ensure a fair and reasonable price is paid for every part. Although we currently have programs in place that identify overpricing, we are expanding these efforts and are taking other actions to improve our procurement practices.

The grass roots effort of Air Force programs to prevent paying unreasonable prices for spares is Zero Overprice. This Air Force-wide program was instituted in March 1979 to encourage and reward Air Force personnel who identify and report prices of goods and services suspected of being unreasonable. Even outside of the Zero Overprice program, our people have been identifying, reporting and correcting overpricing. The Air Force is developing an Air Force-wide publicity campaign to increase emphasis on the Zero Overprice program.

The Air Force's largest buyer of spare parts, the Air Force Logistics Command, has launched a major initiative against unreasonable spare parts price increases with Pacer Price. This program will institutionalize a pricing control procedure that will result in buying smarter and more effectively. Pacer Price is a major Air Force initiative involving an in-depth study of the spare parts pricing process during provisioning, acquisition, and replenishment. The program brings together a team of engineers, manufacturing estimators, price analysts, small business people, and a person called the "competition advocate" to examine items being bought each year. This examination includes "should cost" evaluations, application of parameters to determine exceptional price growth, and a review of the standard Air Force pricing systems to ensure the accuracy of catalog prices.

The Air Force is also attacking the overpricing problem through increasing competition. Competition reduces prices; therefore, the Air Force is committed to encouraging competition in every way possible. We have two major programs underway to increase competition.

Our competition advocacy program within Air Force Logistics Command and the Air Force Systems Command is improving the Air Force's competitive performance. The program establishes competition advocates, who try to define and eliminate the major impediments to competition. They are also actively involved in reviewing the acquisition and management of technical data, and the competitive breakout of spare parts. In addition, they are currently tracking the reporting of competitive and noncompetitive Air Force contracts.

Our other major program, the Department of Defense Spare Parts Breakout Program, which identifies parts that can be procured competitively or from actual manufacturers rather than the prime contractor. This program has accomplished much since it was established in 1969. In the future, we expect the Department of Defense Spare Parts Breakout Program to increase competition among Air Force contractors, reduce sole source procurements, broaden the industrial base and lower prices for spare parts. In addition, the Air Force has changed its regulations to ensure that the government obtains unlimited rights to technical data not later than five years after delivery of the first production item. This provision is mandatory in all future solicitations and contracts that involve significant numbers of spares or large expenditures of funds for spare parts. The regulation change is being reviewed at the request of the Office of the Secretary of Defense.

The Air Force also established an Air Force Management Analysis Group (AFMAG) for spare parts acquisition. The AFMAG was established at the direction of the Air Force Chief of Staff to perform an independent analysis of the spare parts acquisition process and to identify those situations that prevent the Air Force from paying fair and reasonable prices for spare parts and from increasing competition. The AFMAG short term focus is to take actions that will impact the Fiscal Year 1984 spare parts buy and to ensure a reasonable price on every item through increased competition. Its long term focus is to enhance these actions with computerized tracking, better financial management, and improved weapons system management of technical data.

We believe that with these management programs, we will have a more modern, efficient spare parts acquisition system that will contribute significantly toward providing this nation with the best possible warfighting capability.

SIMULATORS AND TRAINERS

To maintain peacetime readiness and prepare for wartime, our aircrews must be just as ready as the equipment they fly. To achieve a high level of combat readiness, aircrews must practice under simulated combat conditions. The training must be rigorous and realistic so that crew members can exploit the full potential of their weapon systems. The Air Force flying hours program, managed under the Operations and Maintenance appropriation, yields one of the highest readiness payoffs. Supported by sufficient spares, these training missions and exercises pay off in a more effective combat capability and lower accident rates.

Achieving a high state of mission readiness through improved training is the primary objective of the Air Force Flight Simulator program. The most important return we expect from modern simulator investments is to attain combat mission readiness through training in a more efficient and effective manner. However, simulation is only a complement to "in-flight" proficiency training. Simulators are used to train safety-of-flight tasks, such as emergency procedures, that require repetition or flight conditions that are difficult or not prudent to achieve in the aircraft. Also, we use simulators to train those war fighting tasks that cannot be easily trained in the aircraft because of equipment, range, or airspace limitations.

With the right combination of flight simulators and aircraft, we intend to: maintain and improve the combat readiness of experienced aircrews; provide effective initial and continuation training for other less experienced pilots and aircrew members; and conserve scarce resources such as energy and weapons. We believe that the proper mix of flying hours and simulator time will result in more proficient aircrew members. Under wartime conditions those crew members should have lower airframe and aircrew loss rates.

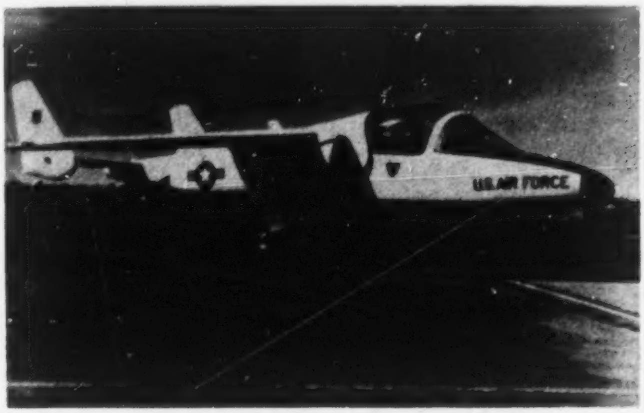
B-52 Weapons System Trainer

We have many simulators now in the field, including those for the F-15, A-10, C-5, B-52, C-130, C-141, KC-10, E-3, T-37, F-16, KC-135 and T-38. We have funds programmed in Fiscal Year 1985 to continue to procure Operational Flight Trainers for the F-15, F-16 and the C-5B. Also in Fiscal Year 1985, we plan to initiate procurement of the C-5/C-141 Aerial Refueling Part

Task Trainers, the B-1B Weapon System Trainer, and to procure the second EF-111A Operational Flight Trainer. In addition, we will begin development of LANTIRN simulation, the GBU-15 Part Task Trainer and the T-46A simulator.

The Air Force expects to continue its flight simulator program for new systems such as the C-17 and the Advanced Tactical Trainer. We are also initiating efforts to upgrade existing systems in the field to extend their useful lives and improve their supportability.

In order to meet pilot training requirements without reducing quantity or quality, we must replace the aging, operationally deficient T-37. The T-46A Next Generation Trainer will have twin engines, side-by-side seating, and a pressurized cockpit. In addition, the T-46A will have significant improvements over the T-37 in performance, maintainability, and reduced noise. We are requesting funds to procure ten aircraft in our Fiscal Year 1985 budget request.



T-46A Next Generation Trainer

MODIFICATIONS

With fewer new aircraft being produced, we are keeping our inventory aircraft far longer than before. New capabilities to cope with the changing and increasing threat are provided through modification of existing aircraft. For instance, we are well underway in the EF-111 production program to provide tactical jamming capability. A large part of our tanker shortfall will be alleviated when we complete the reengining of the KC-135 to increase its fuel offload capability. The B-52 is being upgraded with a new offensive avionics system, cruise missile capability, and improved electronic countermeasures. For selected B-52Gs we are providing Harpoon carriage for a maritime role.

Our modification program also includes structural modifications to extend aircraft life consistent with longer retention. Wing modifications are on-going for the C-5, C-130, and the KC-135 fleet.

Another problem with aging aircraft is the requirement to replace tube-type avionics and analog computer technology with modern, reliable systems. B-52 radars and flight control systems, F/FB-111 avionics, RF-4 radar, and numerous common systems such as radios, radar altimeters and air data computers are a few of the many modifications underway to solve supportability problems and to provide improved reliability.

WAR CONSUMABLES

The War Consumables program provides such things as external fuel tanks, bomb racks, adapters and pylons. They are procured as replacements for those items which would be jettisoned from aircraft under wartime conditions. The majority of the funds in this year's war consumables' request are for F-16 external fuel tanks. These tanks are used to extend the range of the basic airplane for long range missions. While carrying these tanks, maneuverability is reduced and drag increased. The external tanks are jettisoned in combat to restore maneuverability and to lower drag.

Two different tanks are being procured: a 300 gallon fuselage tank and a 370 gallon wing tank/pylon. Both tanks are being procured on multiyear contracts. The request also includes funds for Maverick, High Speed Antiradiation Missile, and Advanced Medium Range Air-to-Air Missile launchers, and F-4 external fuel tanks. All programs are structured to meet our minimum outyear sustainability goals.

AIRCRAFT COMMON GROUND EQUIPMENT

The Common Ground Equipment program is a key factor in the overall readiness and sustainability posture of our air forces. It provides those items necessary to maintain, service, and test aircraft and their components. These items are used throughout the Air Force logistics complex--on the flight line, in base maintenance shops, and at the centralized maintenance activities.

Approximately half of our Fiscal Year 1985 budget request for aircraft common ground equipment provides equipment for new aircraft entering the inventory. The remaining portion of the request is for equipment replacement and war reserve material build-up to support rapid force deployments.

Continued support is imperative in the area of readiness and sustainability. These programs are designed for steady, incremental growth. Any significant disruptions will shift the balance of our military capability posture and compound the problems we are striving to overcome.

SECTION IV

FORCE PROJECTION

AIRLIFT

Mobility forces--airlift, sealift, and prepositioning--are essential to our force projection strategy because they provide the link between force structure and combat capability. Economic and political realities will not allow the stationing of troops and equipment in every geographical area where our vital interests may be challenged. Our conventional war strategy relies on our ability to rapidly deploy combat forces from bases in the continental United States to areas of crisis and to sustain combat units for as long as needed. Our military power means little, from either a deterrent or a warfighting perspective, if it cannot be projected in time to meet a threat.

During the critical early phases of a conflict, only airlift has the responsiveness and flexibility to meet mobility requirements in the days or weeks before the first sealift deliveries begin. In some cases, even a small force quickly applied at the right place may deter the outbreak of conflict, or failing that, turn the tide of battle.

Sealift provides the greater load capacity needed for follow-on force buildup and sustaining support, but lacks the responsiveness and flexibility of airlift. In addition, some areas are not accessible to sealift, so airlift is required to move time urgent items from secure seaports to crisis areas.

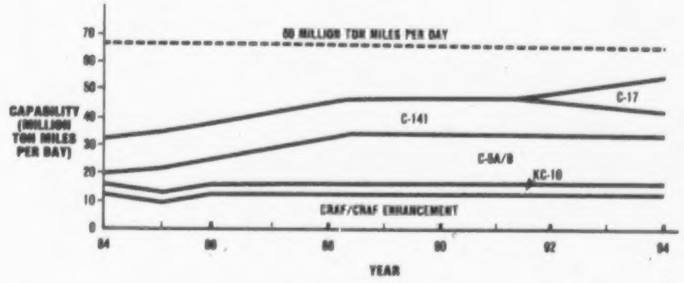
Prepositioning greatly increases our combat potential in selected regions; however, high levels of forward prepositioning reduce operational flexibility. For prepositioning to be fully effective, troops and support equipment must be airlifted to join up with the prepositioned material before the conflict starts, thus increasing the need for airlift in the early days of a conflict.

The evolving threat and the growing ability of the Soviets to attack with little warning have pushed demands for airlift well beyond the capabilities of our current forces. The projected short warning time prior to an attack on Western Europe has placed an even greater premium on speed for a NATO deployment. A rapid and sufficient airlift capability could prevent substantial losses and avoid an escalation of hostilities. In other areas of the world, where warning times may be equally as short, the airlift requirements for the deploying force could be even more demanding than for a NATO deployment. In fact, airlift for rapid deployment is currently a limiting factor in our conventional war strategy.

The improved combat capability of potential enemy forces has compelled our ground forces to increase the size, weight, and total numbers of their heavy mechanized firepower items. The majority of Army and Marine Corps firepower equipment is outsized, that is, too large to be carried on any current airlifter except the C-5.

Airlift capability is provided by C-130, C-141 and C-5 aircraft in active duty, Reserve and Air National Guard units, and cargo and passenger aircraft that are in the Civil Reserve Air Fleet. Since 1974, 17 studies, including the Congressionally Mandated Mobility Study, have examined our strategic mobility requirements and have documented deficiencies in our defense mobility posture. The Air Force Airlift Master Plan provides for intertheater capability as shown below. The long term level of intertheater airlift capability recommended by the Congressionally Mandated Mobility Study is 66 million ton miles per day.

INTERTHEATER AIRLIFT MASTER PLAN



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Our overall airlift enhancement strategy is divided into three parts: improvements to existing forces, near term capability increases, and attaining the long term level of capability recommended by the Congressionally Mandated Mobility Study. Our request for Fiscal Year 1985, in research, development and procurement remains committed to correcting these deficiencies.

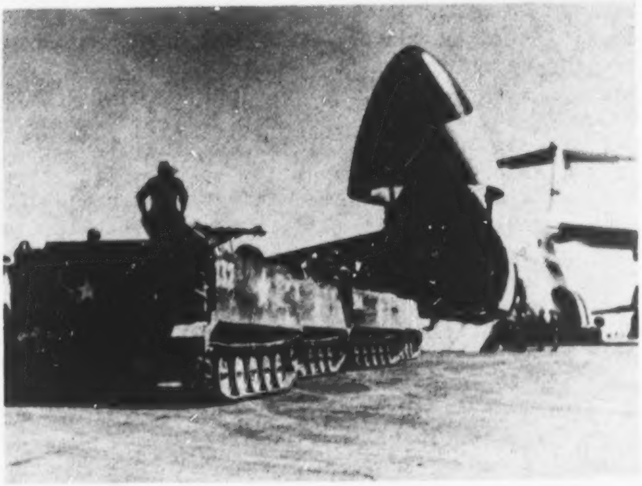
We have programs underway to improve the readiness, sustainability, and capabilities of our current airlift systems. These programs include increasing spare parts stocks and crew ratios to permit higher utilization rates of our C-5 and C-141 aircraft, increased aerial port personnel and airlift support equipment, and upgrading Military Airlift Command C^3 systems. The C-5A wing modification will extend the lifetime of this system by 30,000 flying hours. C-130B and early model C-130E aircraft are also undergoing a wing modification which will allow these aircraft to continue flying into the 21st century.

Another of our problems has been the chronic and significant shortfall in our capability for long-range airlift of oversize and bulk cargo. To help correct this shortfall we recently completed the C-141 stretch program to extend the fuselage and add an air refueling receptacle. The stretch increased this aircraft's pallet capacity by 30 percent and resulted in more efficient use of the airplane. In addition, the C-141 is receiving a service life extension to 45,000 hours. In Fiscal Year 1985, we will also continue needed C-141 improvements to several on-board systems, such as station keeping equipment, which enables us to deploy and employ a brigade-size airborne force in adverse weather.

Even with the enhancements planned for our existing forces, we will still have serious shortfalls in our capability for intertheater airlift. For the near term, we are procuring additional KC-10s and the C-5B to provide substantial improvement to the U.S. defense mobility posture. In addition, we are engaged in a modification program to increase the cargo capability within the Civil Reserve Air Fleet by adding cargo convertibility features to wide body 747 passenger aircraft. We are also procuring three C-19 aircraft (Boeing 747s) for the Air National Guard. These four programs--KC-10s, C-5Bs, Civil Reserve Air Fleet enhancement and C-19s--will increase our present capability by 15.4 million ton miles per day. Since the KC-10 and the C-5A aircraft are in the Air Force inventory, existing training and support elements will allow the new KC-10 and C-5B aircraft to transition quickly to operational status.

The air-refuelable C-5 has an intercontinental range and can carry all the major firepower and equipment items of our modernized ground forces. It is the only aircraft presently capable of transporting key outsize firepower equipment needed by the Army and Marine Corps to respond to worldwide contingencies. Our in-service fleet of 77 C-5A aircraft is not adequate to meet these outsize cargo needs. We plan to increase the C-5 force to 127 aircraft by procuring 50 C-5Bs through Fiscal Year 1987. The C-5B will be the original C-5 design, updated with all currently approved engineering change proposals, a 30,000 hour service life wing, modernized TF39-1C engines, improved avionics, and more durable and corrosion-resistant aluminum alloys.

By acquiring C-5Bs, we will be able to begin promptly to correct the serious intertheater shortfall in our outsize cargo airlift capability by improving our ability to transport large volume, heavy weight cargo over intercontinental distances. Acquisition of C-5Bs will enhance our ability to rapidly project combat forces worldwide. In Fiscal Year 1985, we are requesting funds for procurement of ten C-5B aircraft.



C-5B Galaxy

For the long term, the C-17 is a key element in the Air Force Airlift Master Plan that addresses the overall airlift shortfall, modernization requirements, and capability voids of the current fleet. This rugged, reliable airlifter will incorporate proven low risk technology to operate efficiently over intercontinental distances, and into and out of the small, austere airfields typical of contingency areas around the world. The air-refuelable C-17 will provide a full spectrum of delivery modes--airland/airdrop of outsize cargo, low altitude parachute extraction, and rapid combat offload.

C-17A Airlift Aircraft

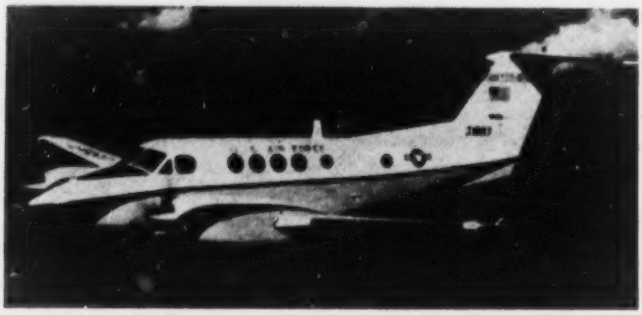
The C-17 is the capstone of the airlift improvement program. It is planned to provide three vitally needed capabilities. First, it contributes to the completion of the recommended increase in intertheater airlift capability stated in the Congressionally Mandated Mobility Study. Second, it provides the theater commander with outsize intratheater capability. Third, it will replace the lost capability when some C-130s and the C-141s reach the end of their service life in the 1990s. The Air Force request for Fiscal Year 1985 will start full scale development leading to initial procurement in Fiscal Year 1988. Initial operational capability is planned for Fiscal Year 1992.

The Civil Reserve Air Fleet Enhancement Program is designed to encourage airlines to add cargo-convertibility features to their wide-body passenger aircraft. The Department of Defense pays for the modification and resulting additional operating cost due to the increased weight. In return, we get a much needed increase in bulk and oversize cargo airlift capability at a total life cycle cost that is less than one-sixth that of organic ownership. In Fiscal Year 1985, we are requesting funds to modify four B-747 aircraft.

Other key mobility programs include the CT-39 replacement, now the C-21/C-12 program, and C-140 replacement, now the C-20 program. The C-21/C-12 program addresses the need to replace the existing CT-39 Operational Support Airlift fleet because of aircraft age and escalating maintenance costs. The wartime mission of these aircraft is to provide time sensitive command and staff movements, courier intelligence information, transport hospital supplies, fly medical evacuation missions, provide a small parts resupply capability, and transport returning prisoners of war to debriefing facilities.

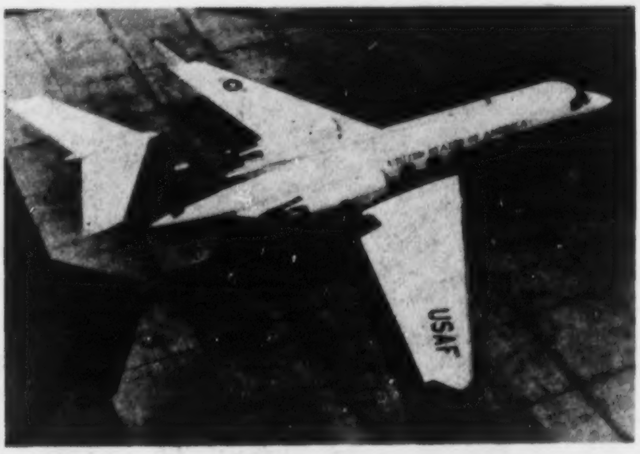
C-21 Operational Support Airlift Aircraft

In peacetime, C-21/C-12 aircraft provide low cost pilot flying experience. In Fiscal Year 1985, we are requesting funds to continue the lease of C-21/C-12 aircraft.



C-12F Operational Support Airlift Aircraft

The Air Force has 11 C-140B aircraft which are used to transport high ranking government officials and foreign dignitaries in the United States and Europe. The C-20 program will replace these aircraft by Fiscal Year 1988.

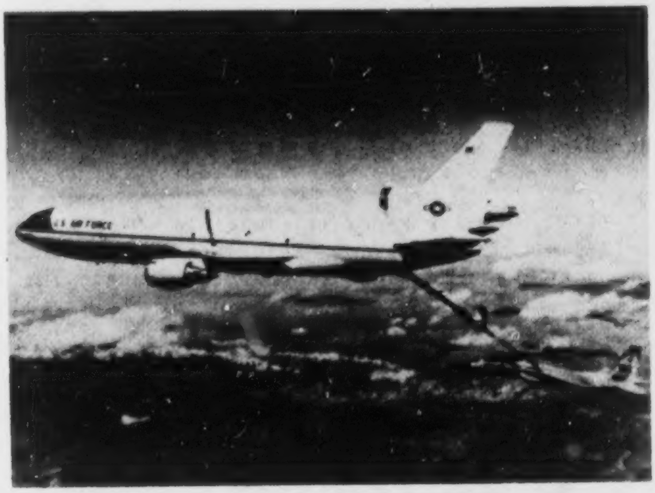


C-20 Operational Support Airlift Aircraft

During Fiscal Year 1983 and 1984, we leased three C-20 aircraft. In Fiscal year 1985, we are requesting funds to procure the first three of a planned buy of 11 C-20 aircraft.

AERIAL REFUELING

Along with airlift, aerial refueling is essential to successful deployment operations. We are planning a force of 60 KC-10As and will complete procurement by Fiscal Year 1987. Our Fiscal Year 1985 request includes eight aircraft. The KC-10As will greatly improve the Air Force capability to support contingency operations, reduce our dependence on foreign bases, and enhance our capability for the rapid deployment of combat forces. Airlifter cargo loads can be greatly increased and delivery times to destination reduced through use of the KC-10A because of its large fuel offload and long range capabilities. The KC-10A also can carry considerable amounts of cargo. In addition, the KC-10A will make more KC-135 tankers available to support the strategic bomber force. KC-10A aircraft are being procured using a multiyear procurement contract which provides substantially lower prices than those on comparable commercial sales.



KC-10A Airlift/Tanker Aircraft

A key component of Strategic Force Modernization is KC-135R Modernization. The KC-135 fleet, procured from 1957 to 1965, provides the backbone of USAF air refueling capability. The KC-135 airframe still has the majority of its service life in front of it, but is operationally limited by the increasingly obsolete, 1950 technology J57 engine. The KC-135R Modernization Program reengines with a fuel-efficient, high bypass turbofan engine, the CFM56, and updates or replaces 34 other key systems.

KC-135R Tanker Aircraft

The KC-135R will provide a 50 percent increase in fuel offload capability and significantly reduce the current shortfall in our air refueling capabilities. This unique program converts the proven KC-135 into a dependable performer for the future--at about one-third the cost of a new aircraft. In 1985, we plan to modernize 48 KC-135s with the CFM56 engine.

In addition, the Air Force is reengining 96 Air National Guard KC-135s with JT3D engines, using funds added to the Defense budget by the Congress in previous years. The JT3D engines, made available by the retirement of commercial 707 aircraft, provide a 20 percent increase in fuel offload capability and resolve current noise pollution problems for Air National Guard units located in urban locations.

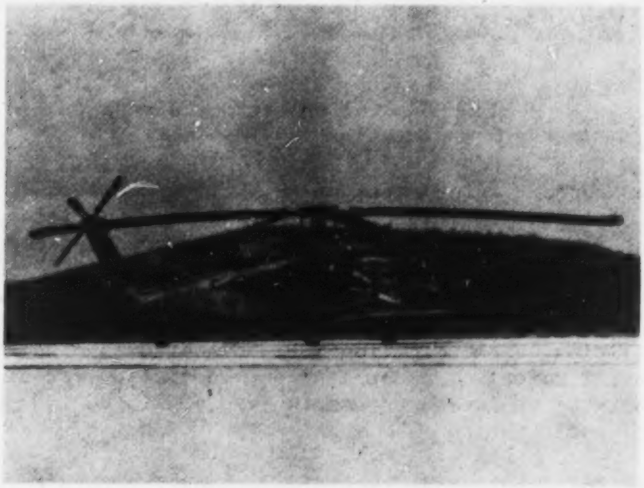
SPECIAL OPERATIONS AND RESCUE/RECOVERY FORCES

U.S. national security requires the maintenance of special operations forces capable of conducting the full range of special operations on a worldwide basis, and the revitalization of these forces must be pursued to provide an adequate and effective operational capability.

Our Combat Helicopter Modernization Program addresses the urgent need to modernize the Air Force's Combat Rescue and Special Operations Forces to cope with increasing threats and to overcome severe maintenance problems resulting from obsolete equipment. We are developing a derivative of the Army UH-60

Black Hawk--a helicopter of proven reliability, maintainability, and survivability. Using the basic H-60, we are integrating improved avionics for precision low-level navigation at night and in adverse weather, adding auxiliary fuel tanks, incorporating an air refueling capability, and installing other necessary Air Force mission equipment. The HH-60 will be operational in the active force, the Air Force Reserve, and the Air National Guard.

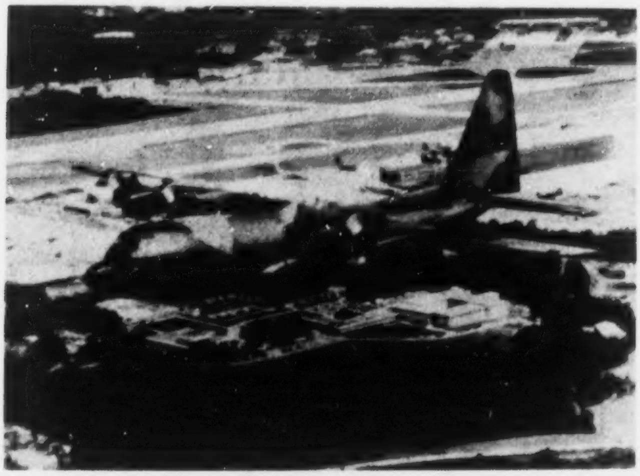
The HH-60 program is constructed with an affordable mix of 69 fully capable and 86 less capable aircraft. The fully capable version, the HH-60D, will be capable of precision low level navigation at night and in adverse weather conditions. The less capable version, the HH-60E, will not be equipped with night and adverse weather avionics, and will be limited to low level operations in visual conditions only. Together, the HH-60D and HH-60E will constitute a fleet equipped for operations in a wide variety of threat environments. Our Fiscal Year 1985 request is for advance buy to support procurement of helicopters starting in Fiscal Year 1986.



HH-60 Combat Helicopter

To increase our long range special operations capability, we are procuring MC-130H Combat Talon II aircraft. These aircraft will increase our capability to insert and resupply special operations teams which is the backbone of special operations mission.

These forces primarily support crisis response actions of a covert, clandestine or low-visibility nature. In addition, they support all levels of conflict from low intensity up through general warfare.



MC-130H Special Operations Aircraft

Our current aging force of 14 MC-130E Combat Talon I aircraft is insufficient to meet mission taskings. Our Fiscal Year 1985 request for two MC-130H aircraft and advance procurement of four aircraft continues to support our multiple theater requirements. In addition, the budget also continues the modification program to improve and upgrade the navigation and self-protection capabilities on the existing MC-130E and AC-130H gunships. To provide refueling capability for special operation and rescue helicopters, we intend to continue to modify HC-130s to a tanker configuration.

The Joint Vertical Takeoff and Landing Aircraft (JVX) program is a Department of Defense initiative to develop a common vertical takeoff and landing vehicle for multiservice use. The executive agent for the program is the Department of the Navy, and the program manager is assigned from the Marine Corps. Air Force has a valid JVX requirement for the long range special operations extraction mission. The program will take advantage of demonstrated tilt-rotor technology and promises to reduce total Department of Defense costs through a common development program. While the Navy will fund the basic program, the Air Force will fund those aspects of the program that are Air Force unique. Our Fiscal Year 1985 request is for development of Air Force unique avionics systems on the JVX.

SECTION V

THEATER FORCES

In order to protect our national interests and the interests of our Allies, our forces must have the ability to meet conventional threats in an expanding number of regions. While Central Europe presents the most formidable array of adversary conventional forces, Southwest Asia, with its vast distances and varied environments, has created a new arena that our personnel and equipment must also accommodate. In addition, acts of aggression may overtly or covertly be exercised by the Soviet Union, Soviet satellites, or any of several hostile countries in the Atlantic and Pacific Theaters. Last year, events in Lebanon and Grenada demonstrated the global nature of our commitments.

After expanding our airlift capability, modernization and expansion of our theater forces is the next highest Air Force priority. To meet the challenges presented throughout the world, our forces must be capable, flexible, ready, and sustainable. To ensure that they are the most capable in the world, we continue to use our advantages in technology, tactics, and dedicated, well-trained people.

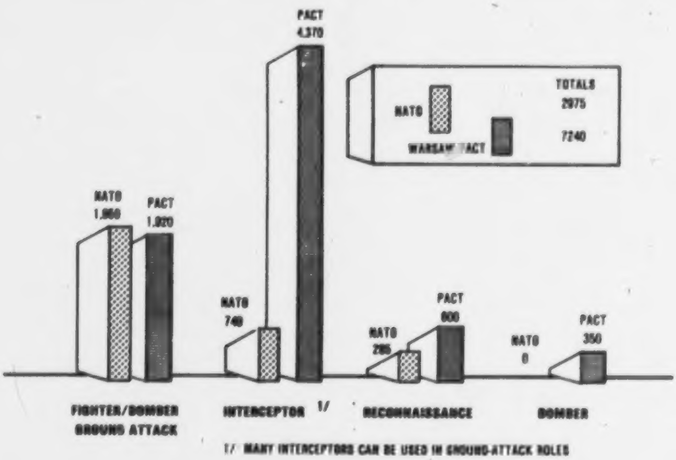
We have organized and trained our active and Air Reserve Forces as a total force. Our reserve components provide two-thirds of our air defense capability, half of our tactical reconnaissance capability, and one-third of our tactical fighter capability. Modernization of these components is essential to support this composite force, which is the backbone of our conventional military power.

As the most formidable adversary of the United States and its NATO allies, the Soviet Union has continued to outproduce the NATO countries and position its newest and most capable systems for operations against NATO forces in Europe. As an example, since 1980 the Soviets have produced over 4500 tanks, including the T-80, which are deployed with forces directly against NATO. As a result of this continuing emphasis on armor, the Warsaw Pact has built up a three-to-one tank advantage over NATO.

The Soviets have also implemented the Operational Maneuver Group. The purpose of this specialized group is to penetrate NATO defense rear areas quickly and independently of the main body of Soviet forces to destroy, seize, or disrupt such key elements as nuclear weapons, C^3 facilities, and supply lines. To support their main forces and Operational Maneuver Group operations, the Soviets have transformed their air forces from limited range, low payload defensive day fighters into a long range, offensively potent tactical air force with an increasing capability to operate in adverse weather.

In spite of slower fighter production, the Soviets are producing over 1200 new fighters a year and are beginning increased rate production of their next generation air-to-air and air-to-ground fighters. At the same time that Soviet expansion of tactical aircraft is widening the imbalance in quantitative conventional forces, the U.S. advantage in quality forces is also eroding. Although we still maintain an overall lead in high technology systems, the Soviets have made great strides in avionics and propulsion systems which could make their newest fighters, the Fulcrum and the Flanker (to be fully operational in the mid 1980s), comparable to our current F-15s and F-16s. The chart below demonstrates the Warsaw Pact quantitative advantage in combat aircraft in Europe.

NATO/WARSAW PACT COMBAT AIRCRAFT IN PLACE IN EUROPE



1/ MANY INTERCEPTORS CAN BE USED IN GROUND-ATTACK ROLES

Our program to respond to this threat in Europe as well as other potential trouble spots is based on reaching a balance between readiness and sustainability and the modernization of our tactical forces. While we currently have the best fighter and attack forces and weapons in the world, we must continue F-15 and F-16 production in order to modernize and expand our tactical air force. We also need to improve our air-to-surface, night, and all-weather capabilities in both our munitions and delivery systems to offset Soviet quantitative advantages. Improvement of our defense suppression and tactical C^3 systems and acquisition of new sensor systems are also critical to our combat effectiveness.

In addition, continued deployment of the Ground Launched Cruise Missile is necessary to help offset the Soviet advantage in theater nuclear forces in Europe. Finally, development of offensive chemical weapons will help to deter chemical and biological warfare by forcing Soviet leaders to accommodate possible, in-kind retaliation should they employ such weapons first.

TACTICAL AIR FORCES

Our tactical air forces must be able to accomplish their tasking in a timely and effective manner. They must quickly achieve air superiority so that our ground and airborne forces can operate with less disruption from enemy air attacks. They must be capable of providing offensive air support close to friendly ground forces and they must be able to interdict and destroy enemy forces as they move forward in the battlefield.

To quickly achieve and maintain air superiority, our tactical air forces must have aircraft that can detect and destroy numerically superior and comparatively sophisticated Soviet fighters and bombers. This requires effective avionics, weapons, and propulsion systems that optimize weapons employment and aircraft performance.

Since a large percentage of our munitions inventory is composed of older, less capable munitions, we have developed a Munitions Acquisition Plan to ensure we procure the proper mix of precision guided and unguided weapons. This munitions roadmap will guide us in obtaining the most cost effective air-to-air and air-to-surface munitions available. This year's budget request will continue the research, development, and acquisition of a new generation of munitions with a much higher probability of destruction. A significant characteristic of these munitions is their capability to greatly increase the kills-per-pass of each combat sortie, thereby reducing aircraft and aircrew exposure and losses.

We have also developed a Tactical Fighter Roadmap to guide our fighter procurement. The roadmap examines the types, numbers, mix, and capability improvements needed to accomplish worldwide theater tactical fighter force tasks over the next ten years. It is baselined on the composition of today's fighter force and includes improvements to the existing inventory needed to ensure continuing useful capabilities until they are phased out of the inventory. It includes the acquisition strategy necessary to meet our future force structure and capability needs.

The acquisition strategy is based on three characteristics: the required numbers of fighters to flesh out, modernize and sustain a 40 tactical fighter wing force, as well as an adequate air defense force; the right mix of fighters with the flexibility and effectiveness to accomplish specialized and multirole missions; and quality improvements for our fighters to accomplish more demanding missions in the face of the increasing threat.

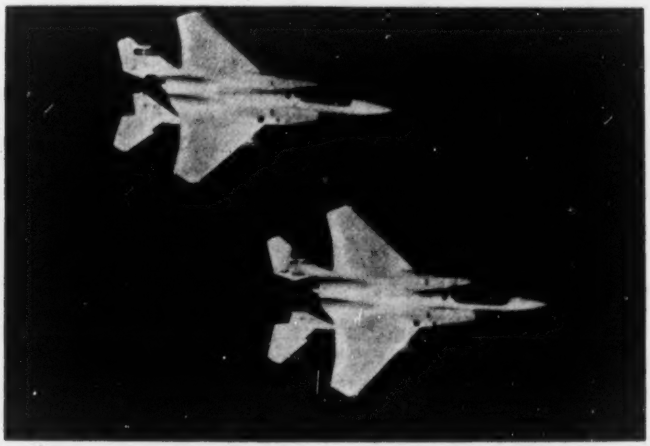
Today our tactical air forces do not have sufficient aircraft to fully equip 40 tactical fighter wings with 72 combat ready aircraft each. To flesh out, modernize, and sustain a 40 tactical fighter wing force, as well as equip our air defense forces, requires a procurement of 260-280 aircraft per year.

While the total numbers are important, of equal importance is the procurement of the right mix of air-to-air and air-to-ground fighters to meet theater commanders requirements. The fighter force mix, therefore, must provide a balance of specialized fighters for the many air-to-air or air-to-ground missions, as well as multirole fighters that can be used in either mission role.

Increasing capabilities are required to meet our critical and demanding mission requirement to operate over enemy territory around the clock and in any weather. We intend to provide weapon system quality improvements to handle the most demanding air-to-air missions until the Advanced Tactical Fighter is fielded in the mid 1990s. We have also programmed quality improvements to address night, all weather and long range air-to-ground mission requirements.

Our budget request for Fiscal Year 1985 continues our progress toward establishing our required 40 tactical fighter wing force with improved capabilities. This continued progress is critical if we are to meet our limited, but economically attainable, force structure objectives for the early 1990s.

Our current air-to-air fighter force is centered around the F-15 Eagle, the best air superiority fighter in the world today.



F-15 Eagle

We will continue to improve the Eagle's combat capabilities by upgrading offensive avionics, incorporating improved self-protection measures, and providing an improved beyond-visual-range identification system. To satisfy force structure requirements for air superiority and to support a more efficient production rate, we are requesting a procurment of 48 aircraft in Fiscal Year 1985.

The F-16 Fighting Falcon is a multipurpose aircraft. In the air-to-surface role, it is becoming our primary offensive air support aircraft. In the air-to-air role, it complements the F-15 and has demonstrated superb handling and maneuver characteristics. The addition of the Advanced Medium Range Air-to-Air Missile to the F-16 weapon inventory will provide the Falcon with an all-weather beyond visual range capability. As part of a multiyear procurement, we are requesting 150 F-16s in Fiscal Year 1985 and long lead for 216 F-16s in Fiscal Year 1986. A substantial number of that buy will be used to modernize the Air Reserve Forces. We are continuing quality improvements for both the F-15 and F-16 in Fiscal Year 1985 which permit incorporation of growth systems and improved avionics which will ensure the effectiveness of these fighters well into the 1990s.

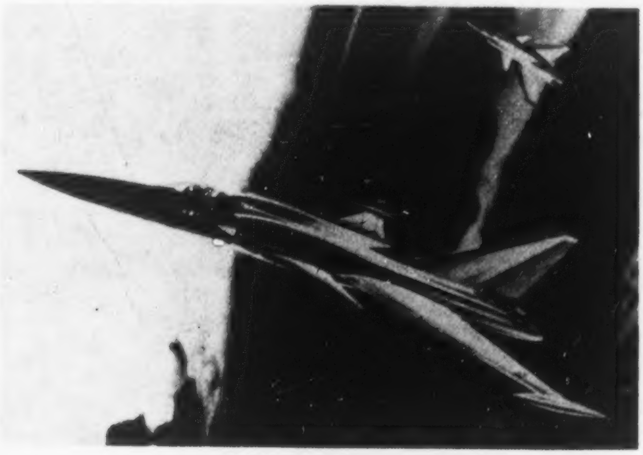
F-16 Fighting Falcon

While the F-15 and F-16 represent the major portion of our current fighter force, there remains a serious near term deficiency in delivering munitions over long-ranges and in adverse weather, day or night.

Both the F-15 and the F-16 have proven air-to-air and air-to-surface capabilities. Therefore, an evaluation was conducted to determine which aircraft could be enhanced to provide our tactical air forces with a dual role fighter which, while maintaining its air-to-air capability, would have significantly increased range and payload, as well as the ability to operate in night and weather conditions. Extensive capability and affordability analyses have been completed and we plan to announce our decision on the aircraft we will evolve to the DRF in the near future. We are requesting funds in Fiscal Year 1985 to continue the development of the necessary systems modifications and to begin advance procurement.

Another area where overall fighter and attack force capability must be improved is fighter engines. Because of the high support costs for the F100 engines currently used in the F-15 and F-16, Congress has directed that we seek more durable and reliable engines with warranties and guarantees in selected performance parameters. To achieve the best overall solution of fighter engine acquisition, we awarded one year firm fixed price contracts for procurement of F100-PW-220 engines (installation in F-15s) and F110-GE-100 engines (installation in F-16s). Future year buys will be based on deployment plans, supportability cost and Air Force requirements for F-15 and F-16 aircraft.

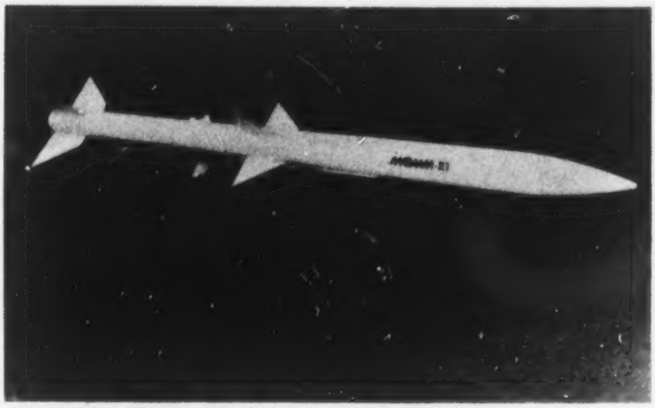
The last air superiority fighter first became operational in 1975 when the F-15 entered the inventory at Langley Air Force Base, Virginia. The Advanced Tactical Fighter is planned to be introduced



Artist Concept of Advanced Tactical Fighter in the early 1990s--a gap of almost 20 years. This gap in introducing a new air superiority fighter is unprecedented in our history. On the other hand, the Soviets have introduced two new air-to-air fighters in the early 1970s, are currently fielding three new fighters in the mid 1980s. A new generation of U.S. fighters which take advantage of new U.S. advances in technology will be needed at that time to meet the Soviet threat. In Fiscal Year 1985, funding for the Advanced Tactical Fighter program will support continued exploration of engine and airframe technology to counter the evolving Soviet threat.

To obtain and maintain air superiority, the Tactical Air Forces require the most capable air-to-air weapons as well as quality aircraft. In Fiscal Year 1985, we will procure the AIM-120A Advanced Medium Range Air-to-Air Missile (AMRAAM) which will provide our Tactical Air Forces with a revolutionary tactical weapon.

Compared to its predecessor, the AIM-7M, AMRAAM provides increased velocity, better maneuverability, a more lethal warhead, an improved terminal guidance with an active radio frequency seeker, and a greater employment envelope. These missile characteristics, along with the capability for multiple target attacks on a single pass, and a launch and maneuver capability will increase our lethality against a numerically superior adversary and reduce the vulnerability of our aircrews.



Advanced Medium Range Air-to-Air Missile

Because of the increased interdiction capabilities of Soviet aircraft, we are improving our airbase defense in the United Kingdom against fast, low flying aircraft. We are continuing the deployment of the British-built Rapier air defense system. Under an agreement with the United Kingdom, we are procuring 32 Rapier fire units and supporting elements. The United Kingdom will man these systems for the United States. First delivery of our Rapier units began in Fiscal Year 1983. Our Fiscal Year 1985 request continues funding for the 32 units.

Rapier Surface-to-Air Missile

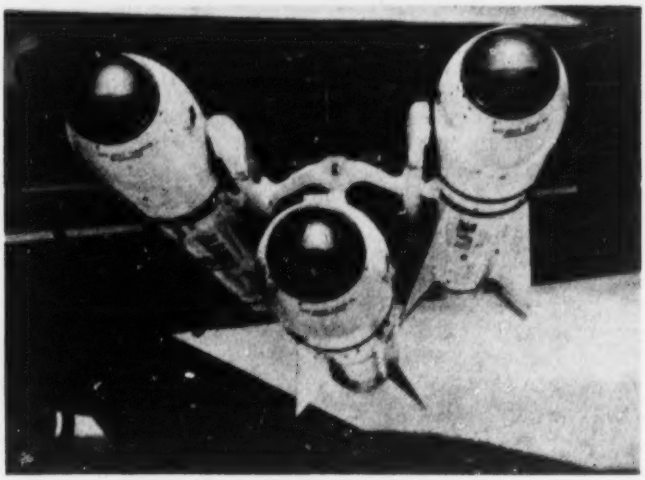
In another effort to strengthen our airbase defense, we are also continuing to acquire the Stinger surface-to-air missile to defend our airbases in South Korea. In Fiscal Year 1985, our request includes 156 Stinger missiles.

Stinger Man-portable Surface-to-Air Missile

In addition, in December 1983, the Secretary of Defense and the Minister of Defense of the Federal Republic of Germany (FRG) signed a Patriot/Roland Cooperative Air Defense Arrangement to provide air base defense for U.S. bases in Germany. As part of this agreement, the United States will procure and support 12 tactical Patriot fire units and two training/spare units for the FRG who will man and operate them at bases in Southern Germany; in return, the FRG will procure, man, support, and operate 27 Roland units for defense of three U.S. air bases.

For the Tactical Air Forces to support our ground attack forces as well as to more effectively perform interdiction and airfield attack roles, we need a complementary mix of direct attack and standoff air-to-surface weapons. Standoff weapons reduce exposure to enemy defenses and provide a capability to strike with a high degree of accuracy and destructiveness. When the situation permits, lower cost direct attack weapons are used to exploit the exceptional accuracy of our modern aircraft.

The most serious threat facing our ground forces in Europe is the potential armored threat of Soviet ground forces. To provide the offensive air support necessary to disrupt a Soviet armor attack, we are supplementing our current inventory of TV Guided Mavericks with the new imaging infrared (IIR) Maverick weapon. The increase in capability provided by the IIR Maverick includes employment in poor visibility and at night, both of which currently offer a degree of sanctuary to enemy armor movements. In Fiscal Year 1985, we are continuing IIR Maverick production.



Imaging Infrared Maverick Air-to-Surface Missile

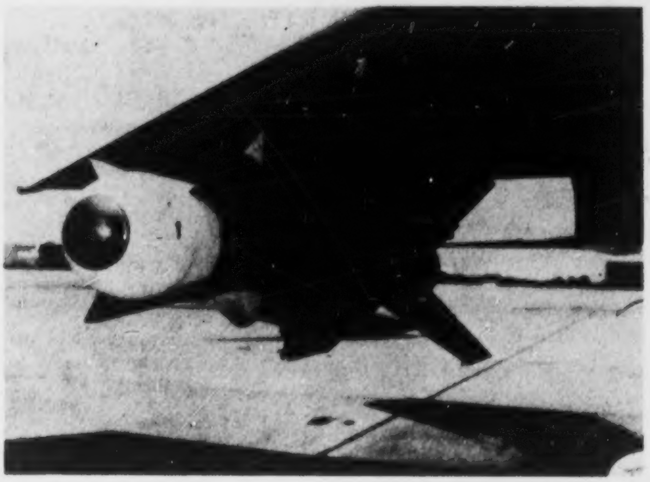
The Combined Effects Munition (CEM), CBU-87, is a 1000 pound free fall, general purpose cluster munition consisting of a Tactical Munitions Dispenser filled with over 200 Combined Effects Bomblets. The CBU-87 can be delivered at low level and at supersonic speeds. Following release, the dispenser spins up, opens, and disperses the bomblets which combine shaped charge, fragmentation and incendiary effects. In Fiscal Year 1985, we will continue production of the CBU-87.

We continue to develop and acquire new cluster munitions like the CEM and antiarmor mines such as Gator. Under the Wide Area Antiarmor Munitions (WAAM) program in Fiscal Year 1985, we are continuing development of the Sensor Fuzed Weapon which will provide a significant increase in effectiveness against armor. The Sensor Fuzed Weapon employs SKEET infrared sensor-fuzed submunitions packaged in a Tactical Munitions Dispenser.

Attacking enemy airfields continues to be a high priority. In Fiscal Year 1985, we are continuing to procure Durandals, which are French built, parachute retarded, rocket-assisted runway cratering munitions. Durandal will be our only cratering munition in the near term. Durandal can be delivered at high speed and low altitude, increasing aircraft survivability over current direct attack munitions. As a follow-on weapon to Durandal, we are continuing development of the Boosted Kinetic Energy Penetrator submunition.

For the future, we are developing standoff attack weapons and submunitions capable of attacking a variety of targets. The Joint Tactical Missile System (JTACMS) will be a long range missile capable of carrying a variety of warheads, including a submunition dispenser and a unitary warhead. JTACMS will also have the capability to attack a variety of targets. Both the Air Force and the Army have conducted extensive efforts to refine the service unique and joint requirements for this missile. The Air Force and the Army have recently signed a joint statement which confirms the status of the joint program and reaffirms the funding commitments. In Fiscal Year 1985, we will continue with the full scale development program.

The powered GBU-15 will provide a short range standoff capability to attack point and area targets with extreme accuracy. During Fiscal Year 1985, the powered GBU-15, which increases the standard GBU-15 range, will continue its full scale development in preparation for production. We also plan to improve the TV Guided GBU-15 by incorporating an imaging infrared (IIR) seeker. The IIR GBU-15 will provide an around-the-clock and limited adverse weather capability for attack of high value, heavily defended targets. In Fiscal Year 1985, we are requesting funds to start IIR GBU-15 production.



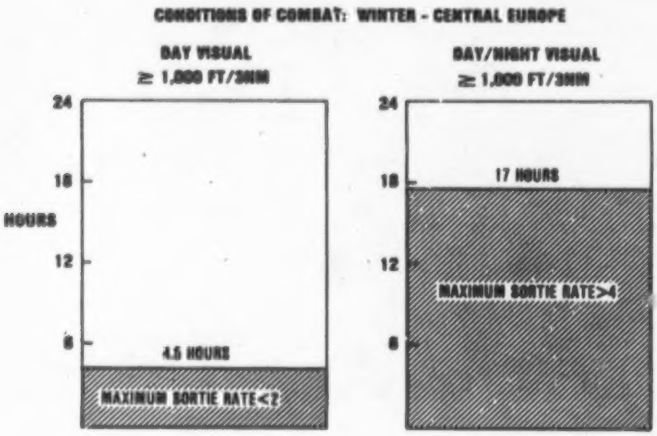
GBU-15

Our current laser guided bombs offer a high degree of accuracy and some standoff capability. The evolution of those weapons into the Low Level Laser Guided Bomb (LLLGB) permits delivery from low altitudes and standoff ranges, thus minimizing exposure to many of the point defenses around enemy targets, and significantly increasing the survivability of our attack aircraft. Our Fiscal Year 1985 request includes funds to continue LLLGB production.

The Tactical Air Forces have an urgent requirement to be able to employ air-to-surface munitions at night under the weather. Because day visual meteorological conditions average only 4.5 hours per day during European winters, the Warsaw Pact would have 19.5 hours per day to take advantage of our limited night operational capability to redeploy forces and move up reinforcements. Currently, only our small F-111 fleet has the capability to deliver large payloads effectively at long range, at night and in adverse weather. Development of the Low Altitude Navigation and Targeting Infrared System for Night (LANTIRN) will permit our fighters to attack Warsaw Pact targets under these conditions.

We plan to equip a portion of our F-16 and A-10 aircraft and all of our dual role fighter aircraft with LANTIRN. We expect LANTIRN will increase our sortie rates by several fold as shown in the figure below. We have requested funds in Fiscal Year 1985 for research, development, and testing of LANTIRN, as well as for production readiness.

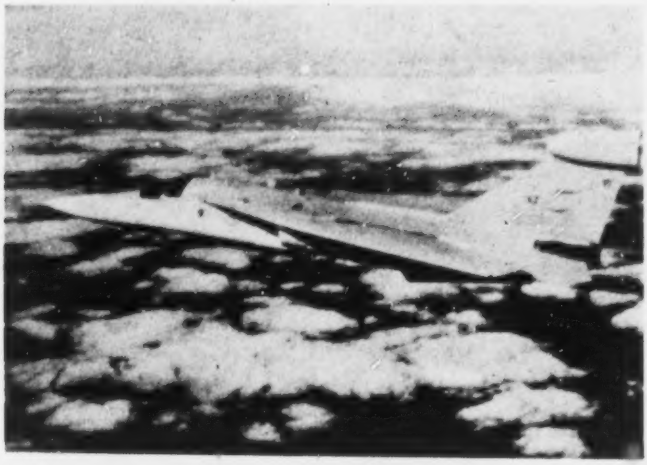
LANTIRN EFFECTIVENESS
INCREASED SORTIE RATE/DENIES SANCTUARY OF NIGHT



Electronic combat is the orchestration of electronic warfare, command, control and communication countermeasures, and suppression of enemy air defenses. In order to successfully conduct tactical air operations, we must improve our ability to effectively disrupt, destroy or avoid enemy radars, jammers, C^3 facilities, and terminal threat weapon systems. One of the most effective ways to deal with these sophisticated defenses is with on-board radar warning receivers and electronic countermeasures equipment. Existing radar warning receivers and electronic countermeasures systems are constantly being updated to deal with the most current threat. Emphasis during Fiscal Year 1985 will be on modernization since current systems are limited in capability against advanced threats.

The Airborne Self Protection Jammer (ASPJ) is a joint Air Force/Navy program to build a common, internally mounted jammer to provide electronic countermeasures for self-protection. Our Fiscal Year 1985 request includes funds to complete developmental testing, to proceed into initial operational test and evaluation, obtain a limited production decision, and commence limited production.

While our self-protection electronic countermeasures equipment is capable of countering electronic threats in a local area, it is not designed to deal with enemy early warning and ground control intercept radars. The EF-111A electronic countermeasures aircraft is our only tactical support system capable of disrupting these radars. Our Fiscal Year 1985 request includes funds to develop system updates.



EF-111A Electronic Countermeasures Aircraft

While the EF-111A will do a good job of suppressing radars, there is still a requirement to suppress the Warsaw Pact command and control structure. The EC-130H Compass Call aircraft is designed for this mission. In Fiscal Year 1985, we plan to modify additional aircraft and improve the Compass Call capability.

The electronic countermeasures systems mentioned so far are all disruptive in nature. We have expanding requirements to enhance our destructive defense suppression capabilities known as the F-4G Wild Weasel. Attrition has reduced our existing Wild Weasel hunter-killer aircraft force to a critically low level.

To remedy this situation in the near term, we are requesting funds in Fiscal Year 1985 to convert F-4Es to the F-4G Wild Weasel configuration. In addition, we are upgrading the APR-38 Wild Weasel Receiver/Processor to provide a capability against the advanced threat being fielded by the Soviets.

F-4G Wild Weasel Defense Suppression Aircraft

Our best near term destructive defense suppression system is the F-4G with the High Speed Anti-Radiation Missile (HARM). HARM provides the Wild Weasel with the standoff capability, speed and electronic flexibility not available with its predecessors, the Shrike and Standard Anti-Radiation Missile. In Fiscal Year 1985, we are planning to procure 871 HARM missiles and modify the F-4G system to fully exploit HARM capabilities.

The Precision Location Strike System (PLSS) is a key system in our future electronic combat capability. The PLSS will provide accurate target location of enemy electromagnetic emitters in all weather conditions and in projected jamming environments. PLSS, guiding attack aircraft and weapons, will enable our combat aircraft to more effectively rollback enemy surveillance and air defense systems, providing increased survivability. In Fiscal Year 1985, we will begin PLSS production.

Accurate, rapid communications between the various elements of our theater forces essential for successful tactical operations. Because our forces will be facing a numerically superior adversary, efficient coordination between elements of our forces will be one of the keys to success on the battlefield.

Our current fleet of E-3A Airborne Warning and Control System (AWACS) aircraft has already proven its value in real world situations. As the Air Force's only airborne system capable of providing tactical warning and command and control of air operations, we are requesting funds in Fiscal Year 1985 to complete full scale development of C^3 improvements to radios and consoles and accomplish electronic counter-countermeasures improvements.

U.S. AIR FORCE

E-3A Airborne Warning and Control System

The E-3A provides a survivable, jam resistant, wide area surveillance platform that can overcome the limitations and vulnerabilities of ground based radars in dealing with airborne threats. In addition, there is a requirement to provide real time detection of ground movement of forces for attack of enemy second echelon targets. The Joint Surveillance and Target Attack Radar System (Joint STARS) has the capability to locate and track moving targets deep in enemy territory. The value of Joint STARS to the tactical commander could be comparable to the proven value of the E-3A. Our Fiscal Year 1985 funding request will permit further development of the Joint STARS radar, and incorporation of this radar into an airborne platform.

The large amounts of information generated in the tactical battlefield has led us to develop the Joint Tactical Information Distribution System (JTIDS), which will be a highly jam resistant, secure digital information distribution system between the E-3A, ground command and control centers, and some fighters. It will also be interoperable with the JTIDS of the other Services. During Fiscal Year 1985, we will continue integrating the JTIDS into the F-15 as well as developing and testing the JTIDS common message standard.

As has been proven in several Mideast wars and countless NATO exercises, it is essential for our forces to have voice communications on the battlefield in a jamming environment. Our current near term solution to the problem is the HAVE QUICK modified radio. Because we anticipate the Soviets will be developing a counter to HAVE QUICK, we will be improving our communications with HAVE QUICK II in the near term. In Fiscal Year 1985, we will begin installing HAVE QUICK II radios.

As a result of Congressional review of ultra-high frequency anti-jam radio programs, the SEEK TALK full scale development program was redirected. Technical parameters were modified, studies initiated and the Enhanced JTIDS System (EJS) selected as the best approach to the long term Soviet threat to voice communications. EJS will use JTIDS-like signal structure and waveforms, and will employ increased power. The margin of jam resistance offered by EJS will provide our forces with sufficient communications capability in high jamming environments. In Fiscal Year 1985, we will continue EJS full scale development.

The key to more effectively employing sophisticated beyond visual range air-to-air missiles is the ability to confidently identify potential targets at or beyond the ranges of these missiles. Because there are no systems presently capable of full time positive enemy identification, a highly reliable friendly interrogation system is necessary. The current system, the MK XII, is difficult to maintain and is unreliable. Several efforts are underway to improve the MK XII, but a new, secure, and reliable system is necessary. The replacement for the MK XII is the MK XV, which satisfies our requirements and is under negotiation as a Tri-Service and NATO interoperable identification system. Advance development hardware will be completed in Fiscal Year 1985 in preparation for evaluation testing.

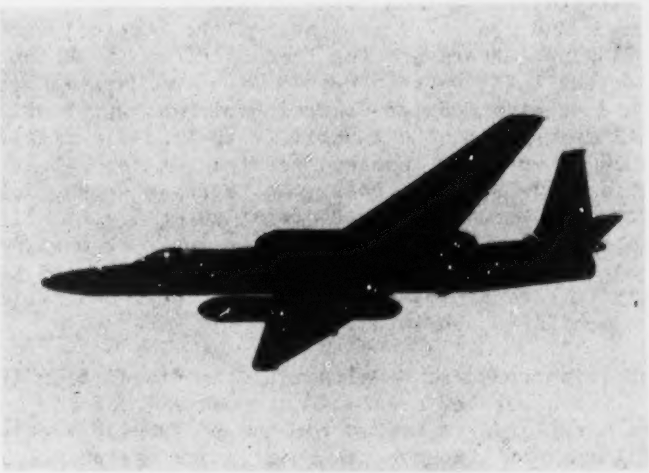
The Joint Tactical Communications (TRI-TAC) program provides the modernized switched voice and digital data communications required by our tactical ground forces. In Fiscal Year 1985, TRI-TAC will have most of its major systems in production. These include the new AN/TRC-170 troposcatter radio, a family of digital message and voice switches and terminals, and the Communications Nodal Control Element which performs automatic technical control functions. RDT&E efforts in Fiscal Year 1985 will support the integration and fielding of these systems, the joint test facility, and design of other TRI-TAC communications equipment.

The Tactical Air Forces must replace and upgrade the surveillance and control components of the Tactical Air Control System (TACS) which are nearing the end of their useful lifetimes. To upgrade the TACS, we have worked with the Marine Corps to develop and acquire Modular Control Equipment which will enhance survivability, provide the capability to handle a significant increase in C^3 workload, enhance service interoperability, and reduce life cycle support costs. An improved ground attack capability, the Ground Attack Control Center System will incorporate modular control equipment hardware components with additional software programs to provide the TACS with the capability to more rapidly control air attacks against time sensitive mobile ground targets.

In addition to these developments, in Fiscal Year 1985, we are procuring ultra-low sidelobe antennas and testing an anti-radiation missile alarm system for the AN/TPS-43E tactical radars. These will improve the radar's jam resistance and increase its survivability against anti-radiation missiles.

The Traffic Control and Landing System (TRACALS) program converts land-based precision landing capabilities from Precision Approach Radars and Instrument Landing Systems to the international standard Microwave Landing System. By the mid-1990s, the NAVSTAR Global Positioning System and Microwave Landing System programs will enable the Air Force to phase out other radionavigation systems while improving combat capability and survivability. In Fiscal Year 1985, TRACALS continues engineering development of a tactical Microwave Landing System; it also begins programs to update its air traffic control surveillance equipment and to make its fixed based systems survivable in a combat environment. Additionally in Fiscal Year 1985, we will complete plans to competitively procure a replacement for C-140/T-39 flight inspection aircraft.

The TR-1 aircraft, a follow-on procurement to the highly successful and reliable U-2R aircraft, will provide high altitude, long endurance surveillance of the battlefield from a standoff position. The aircraft is programmed to carry the Advanced Synthetic Aperture Airborne Radar System (ASARS) and the PLSS. The TR-1 is essential to the theater commander's need for organic, enduring, near time, all-weather surveillance of enemy forces. System survivability will be enhanced by basing the aircraft at RAF Alconbury, UK, and by placing the information processing and exploitation stations in hardened underground facilities. The Fiscal Year 1985 program provides for operations and support of aircraft sensors, ground stations and associated personnel, and the procurement of three TR-1 aircraft.



TR-1 Reconnaissance Aircraft

We have a near term requirement to identify a replacement for our aging and diminishing tactical reconnaissance aircraft. While the RF-4C continues to do an excellent job, we need to find an adequate replacement to meet the expansion of worldwide requirements and attrition.

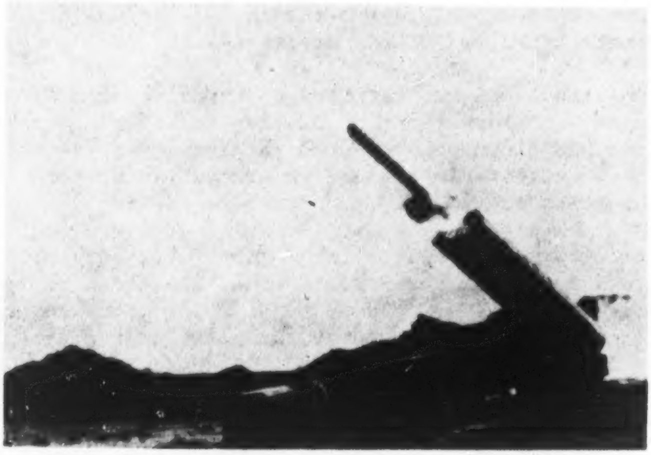
RF-4C Tactical Reconnaissance Aircraft

In order to continue to provide timely battlefield information to our theater commanders, our Fiscal Year 1985 request includes funds to continue support for identifying an appropriate RF-4C replacement aircraft as well as development of the on-board equipment necessary to accomplish its mission.

In addition to needing effective C^3 networks, we also have a continuing requirement for more complete battlefield intelligence. In the upcoming fiscal year, we are requesting funds to initiate an Advanced Tactical Air Reconnaissance System (ATARS). Our initial activities will be to review requirements, evaluate current and planned capabilities, and identify the required reconnaissance and surveillance forces mix of manned and unmanned vehicles needed to meet the threat in the 1990s.

THEATER NUCLEAR AND CHEMICAL/BIOLOGICAL FORCES

Although NATO has no intermediate range nuclear forces such as the Soviet SS-20, the deployment of the Ground Launched Cruise Missile (GLCM) in Europe will help correct the imbalance in capability between NATO and the Warsaw Pact. Operationally, GLCM gives the theater commander added flexibility by allowing our dual capable fighter aircraft to be used in a conventional role for a longer period before committing them to a nuclear role. GLCM's small radar cross-section and low altitude flight profile make it more survivable and complicates the enemy's targeting and defense problems. Our Fiscal Year 1985 budget request completes the planned RDT&E program and includes procurement funds to buy additional weapons systems and spare parts.



Ground Launched Cruise Missile

The Soviet Union possesses a considerable advantage over NATO forces in chemical warfare capabilities, which could be a decisive factor in conventional conflicts. The Soviets consider chemical warfare one of the strengths of their forces, and today, they have about 100 times more chemical munitions than the United States. They also have active chemical munitions production plants, while the United States has none.

Air Force crews flying or working in current defensive protective gear--the mask, hood, special suits, gloves and boots--would rapidly become debilitated. This condition will severely limit our combat capability and restrict overall military operations. The detrimental effects on our people due to protective gear include heat stress, restricted movement, and loss of vision and communications. Tasks which are normally difficult under combat conditions could become impossible in a chemically contaminated environment. Our people must have better individual equipment and collective protective systems to operate and survive during and after a chemical attack.

Improving our chemical defense will not by itself provide an adequate deterrent. The Soviets would enjoy a significant and perhaps decisive military advantage if they were able to force us to operate in protective equipment while their forces remain relatively unencumbered. In fact, our lack of an effective retaliatory capability could provide the Soviets with a powerful incentive to use chemical weapons. Our present capability is limited because we cannot engage and degrade second and third echelon targets with a persistent agent. Our current stocks of chemical weapons no longer constitute an adequate deterrent.

We must reestablish and maintain a credible chemical deterrent. A strong chemical defense and an adequate retaliatory capability are both essential to deterring Soviet use of chemical weapons against the United States or its allies.

Our Fiscal Year 1985 request includes funds to continue the development and procurement of new gas masks, improved protective gloves and clothing, advanced chemical agent detection and warning systems, survivable collective protection systems, and new decontamination equipment.

In addition, we must reestablish a retaliatory capability sufficient to assure that the Soviets would also have to operate in a protective posture. Binary weapons, which do not contain toxic substances until the components are mixed, give us the flexibility, capability, and safe handling characteristics we seek for a U.S. chemical offensive capability. We must continue developing as well as procure binary weapons, such as the Bigeye spray bomb. In Fiscal Year 1985, we have included funds for binary weapons.

SECTION VI

CONCLUSION

Our nation faces a real and serious threat today--the vast military machine which the Soviets continue to build. Over the past 20 years, the Soviets have relentlessly modernized and expanded their military capability. In addition, the Soviets continue to use this military power to undertake more political and military adventurism throughout the world, but especially in areas vital to our national security. If left unchallenged, this Soviet military build-up will disrupt deterrence by creating a shift in the balance of power.

It is imperative that we continue to pursue our objectives to protect our vital interests around the world, to deter any use of force, and to develop a firm basis for negotiating reductions in nuclear armaments.

These objectives determine our budget priorities, as well as our programs, for the next five years. For Fiscal Year 1985, we remain consistent in our budget priorities supporting our people, modernizing our strategic forces, improving the readiness and sustainability of our forces, enhancing our force projection capabilities, modernizing and expanding our theater forces, and improving our capabilities in space.

For the past three years, we have been embarked on a steady course to restore the strength and credibility of our strategic and conventional forces. In addition, we have taken great care in structuring the Air Force's RDT&E and weapon system procurement programs for Fiscal Year 1985. These programs continue to fully support, in conjunction with the other elements of our defense program, our national security objectives. The Air Force budget request represents a realistic assessment of the programs necessary to respond to the Soviet threat. The request was constructed with considerable deliberation regarding a balance among required military capability, program priorities and available resources.

Today's investments in RDT&E, procurement, and military construction provide tomorrow's force structure growth and capability. In making these investments, we are firmly resolved to manage our defense dollars wisely, to increase efficiency in our weapon system acquisition process, and control cost to maximize the return on our investment.

Congressional approval and funding of the programs in our Fiscal Year 1985 budget request will demonstrate our resolve to strengthen our national defense and protect our interests worldwide.

TABLE I
DEPARTMENT OF THE AIR FORCE
FISCAL YEAR 1985 AIRCRAFT PROCUREMENT ESTIMATES
(In Millions of Dollars)

	QTY	FY 85 ESTIMATES
COMBAT AIRCRAFT		
B-1B Strategic Bomber	34	7,102.6
F-15 Tactical Fighter	48	2,052.9
F-16 Tactical Fighter	150	3,748.0
Tactical Fighter Derivative Aircraft	-	26.6
KC-10A Advanced Tanker/Cargo Aircraft	8	647.0
MC-130H	2	92.7
	242	13,669.8
COMBAT SUPPORT AIRCRAFT		
C-5B Airlift Aircraft	10	2,099.4
C-20	3	55.1
T-46A Next Generation Trainer	10	126.7
HH-60D Helicopter	-	22.5
TR-1/U-2R	4	210.6
Range Control Aircraft	2	16.4
	29	2,530.7
MODIFICATION OF IN-SERVICE AIRCRAFT		3,382.1
AIRCRAFT SPARES AND REPAIR PARTS		5,990.2
AIRCRAFT SUPPORT EQUIPMENT & FACILITIES		
Other Production Charges		2,085.9
Common Aerospace Ground Equipment		703.9
War Consumables		235.4
Industrial Responsiveness		78.5
		3,103.7
TOTAL AIR FORCE AIRCRAFT PROCUREMENT	271	$28,676.5M

TABLE II
DEPARTMENT OF THE AIR FORCE
FISCAL YEAR 1985 MISSILE PROCUREMENT ESTIMATES
(In Millions of Dollars)

	QTY	FY 85 ESTIMATES
BALLISTIC MISSILES		
Peacekeeper	40	2,938.9
OTHER MISSILES		
ALCM	-	74.0
GLCM	120	571.1
AGM-65D Maverick	4500	565.2
HARPOON	85	40.3
AGM-88A HARM	871	326.3
Rapier	8	7.6
AMRAAM	174	413.0
Stinger	156	12.9
Target Drones	-	37.5
Tactical Drones	505	38.9
	6419	2,086.8
MODIFICATION OF IN-SERVICE MISSILES		162.3
SPARES AND REPAIR PARTS		639.8
OTHER SUPPORT		
Space Programs		1,299.2
Special Programs		2,662.1
Industrial Facilities		31.4
		3,992.7
TOTAL AIR FORCE MISSILE PROCUREMENT	6459	$9,820.6M

TABLE III
DEPARTMENT OF THE AIR FORCE
FISCAL YEAR 1985 OTHER PROCUREMENT ESTIMATES
(In Millions of Dollars)

	FY 1985 ESTIMATES
MUNITIONS & ASSOCIATED EQUIPMENT	1,424,6
VEHICULAR EQUIPMENT	441.6
ELECTRONICS & TELECOMMUNICATIONS EQUIPMENT	2,692.7
OTHER BASE MAINTENANCE & SUPPORT EQUIPMENT	5,002.6
TOTAL AIR FORCE OTHER PROCUREMENT	$9,561.5M

TABLE IV
DEPARTMENT OF THE AIR FORCE
FISCAL YEAR 1985 RDT&E BUDGET ESTIMATES
(IN MILLIONS OF THEN YEAR DOLLARS)

RDT&E PROGRAM SUMMARY

TITLE	FY 85
TECHNOLOGY BASE	777.7
ADVANCED TECHNOLOGY DEVELOPMENT	584.0
STRATEGIC PROGRAMS	4,445.3
TACTICAL PROGRAMS	2,612.4
INTELLIGENCE & COMMUNICATIONS	215.7
DEFENSE WIDE MISSION SUPPORT	1,999.2
CLASSIFIED PROGRAMS	3,767.8
TOTAL RESEARCH, DEVELOPMENT, TEST AND EVALUATION	$14,402M

PROGRAM DETAILS

TECHNOLOGY BASE

PE #	TITLE	FY 85
61101F	In-House Laboratory Independent Research	16.8
61102F	Defense Research Sciences	190.1
62101F	Geophysics	37.1
62102F	Materials	52.4
62201F	Aerospace Flight Dynamics	64.2
62202F	Aerospace Biotechnology	47.4
62203F	Aerospace Propulsion	60.4
62204F	Aerospace Avionics/VHSIC	72.5
62205F	Training/Simulation Technology	23.2
62302F	Rocket Propulsion	40.0
62601F	Advanced Weapons	44.8
62602F	Conventional Munitions	42.8
62702F	Command, Control, Communications	76.9
62703F	Personnel Utilization Technology	8.8

ADVANCED TECHNOLOGY DEVELOPMENT

PE #	TITLE	FY 85
63106F	Logistics R&D Requirements	5.3
63202F	Aircraft Propulsion Subsystem Integration	27.0
63203F	Advanced Avionics for Aircraft	21.8
63205F	Flight Vehicle Technology	20.9
63208F	Recon Sensors/Processing Technology	8.3
63211F	Aerospace Structures and Materials	10.9
63215F	Aviation Turbine Fuel Technology	4.3
63216F	Adv Turbine Engine Gas Generator	25.4
63217F	Special Power Systems	1.0
63226F	DOD Common Prog Language (ADA)	8.1
63227F	Advanced Simulator Technology	7.5

PE #	TITLE	FY 85
63231F	Crew System Technology	10.7
63244F	Aircraft Non-nuclear Survivability	3.9
63245F	Advanced Fighter Technology Integration	19.0
63250F	Lincoln Laboratory	23.7
63253F	Advanced Systems Integration Demonstration	33.2
63259F	Cartog Applications-Tac & Strat System	1.1
63302F	Space and Rocket Propulsion	5.5
63313F	Advanced Missile Subsystems Demonstration	1.2
63319F	Advanced Technology Cruise Missile	15.4
63363F	Hypervelocity Missile	3.0
63365F	Space Biotechnology	.7
63401F	Advanced Spacecraft Technology	30.7
63406F	Advanced Military Spaceflight Capability	2.8
63410F	Space Sys Environ Interactions Technology	3.7
63424F	Missile Surveillance Technology	7.0
63452F	Very High Speed Integrated Circuits	120.0
63601F	Conventional Weapons Technology	21.8
63605F	Advanced Radiation Technology	12.4
63704F	Manpower and Personnel Sys Technology	2.0
63707F	Weather Systems	3.0
63718F	Electronic Warfare Technology	22.1
63723F	Civil/Environmental Engine Technology	17.2
63726F	Fiber Optics Development	3.1
63727F	Advanced Communications Technology	4.8
63728F	Advanced Computer Technology	6.7
63743F	Electro-Optical Warfare	17.8
63745F	Chemical Warfare Defense	3.8
63750F	Counter/Countermeasures-Advanced Develop	10.4
63751F	Innovations in Education and Training	5.1
63752F	DOD Software Engineering Institute	8.0
63789F	C^3 Advanced Development	23.6

STRATEGIC PROGRAMS

PE #	TITLE	FY 85
11113F	B-52 Squadrons	22.2
11142F	KC-135 Squadrons	4.0
11213F	Minuteman Squadrons	4.7
11312F	PACCS and WWABNCP System EC-135	.8
11316F	SAC Communications	1.5
12310F	NCMC-TW/AA Systems	23.8
12311F	NCMC-Space Defense Systems	52.3
12313F	Ballistic Msl Tac Warning/Atk Assess Sys	3.2
12325F	Joint Surveillance System	1.8
12411F	Surveill Radar Stations/Sites	11.9
12412F	DEW Radar Stations	63.1
12417F	CONUS Over-the-Horizon Radar	60.9
12423F	Ballistic Missile Early Warning System	10.0
12424F	Spacetrack	10.2
12431F	Defense Support Program	64.0
12432F	SLBM Radar Warning Systems	12.2

PE #	TITLE	FY 85
12433F	Integ Operational Nudets Detect System	34.8
12436F	C^2 Process/Display System	11.7
32015F	NEACP and E-4B Class V Mods	27.1
33131F	Minimum Essential Emergency Comm Network	116.9
33154F	WWMCCS Information System-JPMO	32.6
33601F	AF Satellite Communication System	141.6
33603F	MILSTAR	325.0
35155F	Theater Nuc Wpn Storage & Security System	2.0
63258F	Common Strategic Rotary Launcher	77.3
63311F	Advanced Strategic Missile Systems	108.3
63364F	Advanced Air-to-Surface Missile	54.4
63716F	Atmospheric Surveillance Technology	4.9
63735F	WWMCCS Architecture	11.0
64226F	B-1B	508.3
64312F	ICBM Modernization	2440.8
64326F	Strat Conventional Standoff Capability	21.6
64361F	Air Launched Cruise Missile	28.0
64406F	Space Defense System	143.3
64711F	Systems Survivability (Nuclear Effects)	9.1

TACTICAL PROGRAMS

27129F	F-111 Squadrons	71.9
27130F	F-15 Squadrons	82.9
27131F	A-10 Squadrons	4.1
27132F	Dual Role Fighter	147.0
27133F	F-16 Squadrons	83.4
27136F	F-4G Wild Weasel Squadrons	55.3
27162F	Tactical AGM Missiles	3.7
27247F	Air Force TENCAP	.3
27411F	Overseas Air Weapon Control System	3.2
27412F	Tactical Air Control System	28.4
27417F	Tac Airborne Warning and Control System	76.6
27423F	Advanced Communications System	87.0
27431F	Tac Air Intelligence System Activities	1.6
27435F	Tac Reconnaissance Imagery Exploitation	1.2
27595F	Base Comm-Tac Air Forces	1.0
28010F	Jt Tactical Comm Program (TRI-TAC)	11.5
33605F	Satellite Communications Terminals	2.9
35887F	Electromagnetic Combat Intelligence Support	1.9
41115F	C-130 Airlift Squadrons	.8
41840F	MAC Command/Control System	4.4
63230F	Advanced Tactical Fighter (ATF)	94.3
63239F	Adv Tactical Air Reconnaissance Sys	3.7
63256F	Jt Service Adv Vert Lift Acft (JVX)	1.1
63307F	Airbase Survivability and Recovery	4.4
63609F	Advanced Attack Weapons	20.0
63714F	DOD Physical Security Eq-Exterior	1.9

PE #	TITLE	FY 85
63742F	Combat Identification Technology	19.3
63749F	C3CM Advanced Systems	1.0
63770F	Jt Survability Target Attack Radar System	3.3
64201F	Acft Avionics Equipment Development	25.8
64209F	F-100 Durability	14.0
64212F	Acft Equip Development	12.0
64218F	Engine Model Derivative Program	9.2
64220F	EW Counter Response	23.9
64222F	Nuclear Weapons Support	1.9
64223F	Alternate Fighter Engine	56.9
64231F	C-17 Program	129.3
64247F	Modular Automatic Test Equipment	15.8
64249F	Night Precision Attack	98.3
64268F	Acft Engine Component Improvement Program	149.8
64302F	Defense Suppression Weapons Eng Dev	14.8
64313F	Next Generation Trainer	78.0
64314F	Adv Med Range Air-to-Air Missile	217.7
64321F	Joint Tactical Fusion Program	17.8
64324F	Joint Tactical Missile System	35.5
64362F	Ground Launched Cruise Missile	18.7
64601F	Chemical/Biological Defense Equipment	18.2
64602F	Armament Ordnance Development	20.8
64604F	Submunitions Development	48.7
64607F	Wide-Area Anti-Armor Munition	27.3
64617F	Air Base Survivability and Recovery	18.1
64703F	Aeromedical Systems Development	7.0
64706F	Life Support System	15.6
64708F	Other Operational Equipment	22.8
64710F	Reconnaissance Equipment	9.6
64715F	DOD Physical Security Eq-Exterior	12.6
64724F	Tac C3 Countermeasures	28.1
64725F	Combat Identification Systems	16.0
64733F	Surface Defense Suppression	24.5
64737F	Airborne Self-Protection Jammer	29.1
64738F	Protective Systems	48.6
64739F	Tactical Protective System	86.6
64740F	Computer Resources Management Technology	12.4
64742F	Precision Location Strike System	83.0
64750F	Intelligence Equipment	15.3
64753F	Combat Helicopter Modernization	81.3
64754F	Jt Tactical Information Distribution System	86.7
64756F	Side Looking Airborne Radar (SLAR)	24.5
64770F	Joint STARS	95.0
64779F	Jt Interoperability Tactical C^2 System	13.5

INTELLIGENCE AND COMMUNICATIONS

33110F	Defense Satellite Communication System	31.6
33126F	Long Haul Communications (DCS)	9.3
33144F	Electromagnetic Compatibility Anal Center	7.8

PE #	TITLE	FY 85
35114F	Traffic Cntrl/Approach/Landing System	11.8
35164F	NAVSTAR GPS (User Eq)	9.1
35165F	NAVSTAR GPS (Space/Grnd Segment)	33.5
63431F	Space Communications	44.4
64778F	NAVSTAR GPS Full Scale Development	61.0
84733F	General Intelligence Skill Training	7.2

DEFENSE WIDE MISSION SUPPORT

PE #	TITLE	FY 85
33151F	WWMCCS - ADP	.7
35110F	Satellite Control Facility	99.2
35119F	Space Boosters	20.4
35130F	Consolidated Space Operations Center	72.7
35160F	Def Meteorological Satellite Program	42.6
35171F	Space Launch Support	93.8
63248F	Concept Development	2.5
63402F	Space Test Program	71.5
63438F	Satellite Systems Survivability	5.5
64211F	Adv Aerial Target Development	3.4
64227F	Flight Simulator Development	149.9
64411F	Space Shuttle	345.8
64609F	Logistics Technology for Weapons Sys	7.6
64707F	Weather Systems	8.3
64735F	Range Improvement	16.8
64747F	Electromagnetic Radiation Test Facility	7.8
64755F	Improved Capability for RDT&E	75.1
65101F	Project Air Force	16.8
65304F	Acquisition/Command Support - TELECOM	7.1
65306F	Ranch Hand II Epidemiology Study	3.3
65708F	Nav/Radar/Sled Track Test Support	18.7
65806F	Acquisition and Command Support	354.1
65807F	Test and Evaluation Support	437.5
65808F	Advanced Systems Engineering/Plan	3.6
65863F	RDT&E Aircraft Support	47.5
65872F	Productivity Improvement	6.1
71112F	Inventory Control Point Operations	1.4
78011F	Industrial Preparedness	61.9
78026F	Product/Reliable/Avail/Maintain Program	14.9
A1004F	International Activities	2.8

Senator KENNEDY. That was an excellent presentation.

General RUSS. Thank you, sir.

Senator GOLDWATER. You may proceed.

STATEMENT OF MAJ. GEN. GEORGE L. MONAHAN, JR., DIRECTOR OF DEVELOPMENT AND PRODUCTION, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT AND ACQUISITION, U.S. AIR FORCE

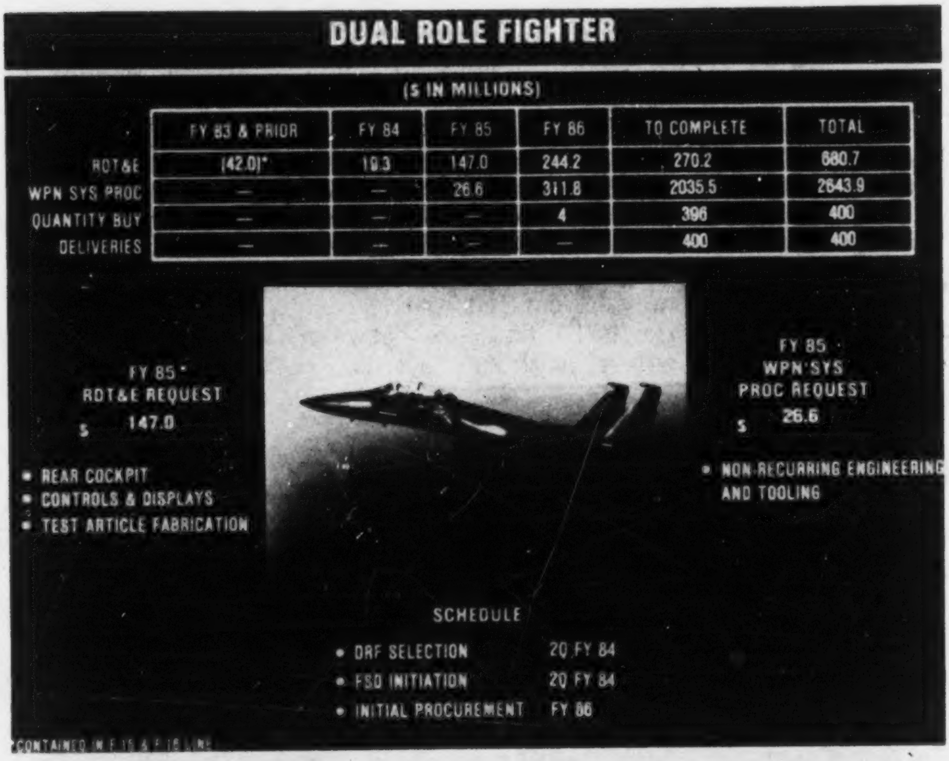
General MONAHAN. Good afternoon, Mr. Chairman.

I would like to get into a little bit of detail on the fighter program and a little bit about engines and our tactical programs. It follows along closely with General Russ' briefing.

First of all, a few words about the dual-role fighter. As you know, our Chief of Staff selected a modification to the F-15 to fulfill our dual-role fighter requirement, which now augments our night, all weather, and deep interdiction capability.

We will continue the development of that aircraft in the fiscal year 1985 and as General Russ mentioned because of the dual-role fighter selection and because of the alternative fighter engine competition selection, we are now revising the budget submission for the dual-role fighter for F-15 and F-16.

These numbers are going to change up here.



DUAL ROLE FIGHTER

($ IN MILLIONS)

	FY 83 & PRIOR	FY 84	FY 85	FY 86	TO COMPLETE	TOTAL
RDT&E	(42.0)*	19.3	147.0	244.2	270.2	680.7
WPN SYS PROC	—	—	26.6	311.8	2035.5	2643.9
QUANTITY BUY	—	—	—	4	396	400
DELIVERIES	—	—	—	—	400	400

FY 85
RDT&E REQUEST
$ 147.0

- REAR COCKPIT
- CONTROLS & DISPLAYS
- TEST ARTICLE FABRICATION

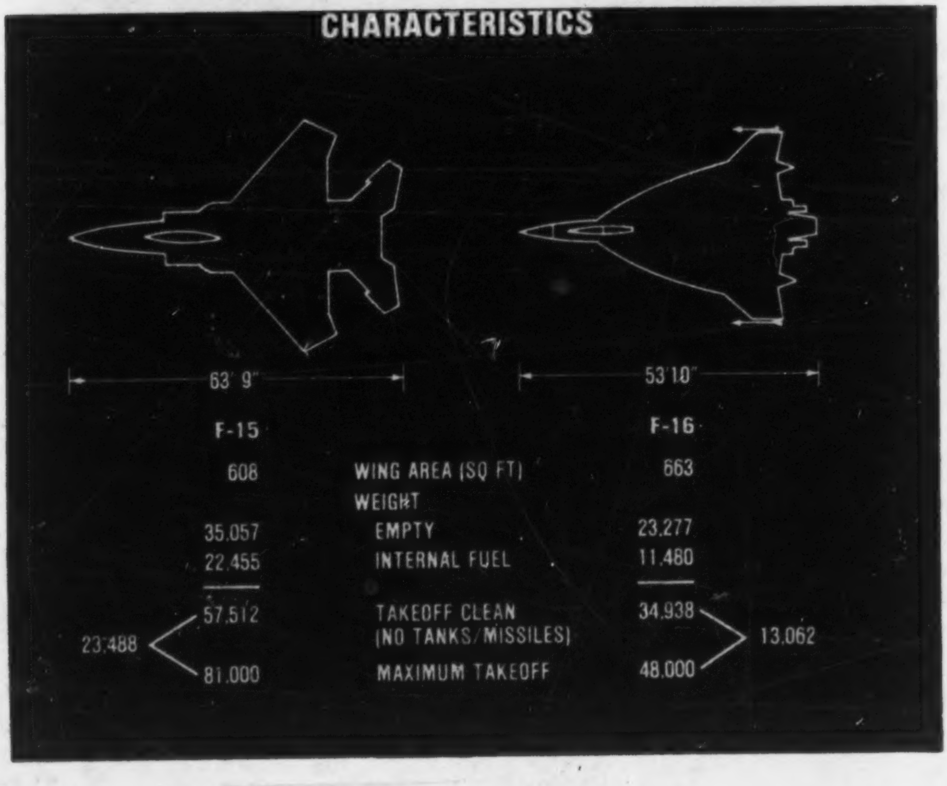
FY 85
WPN SYS
PROC REQUEST
$ 26.6

- NON-RECURRING ENGINEERING AND TOOLING

SCHEDULE

• DRF SELECTION	2Q FY 84
• FSD INITIATION	2Q FY 84
• INITIAL PROCUREMENT	FY 86

*CONTAINED IN F-15 & F-16 LINE



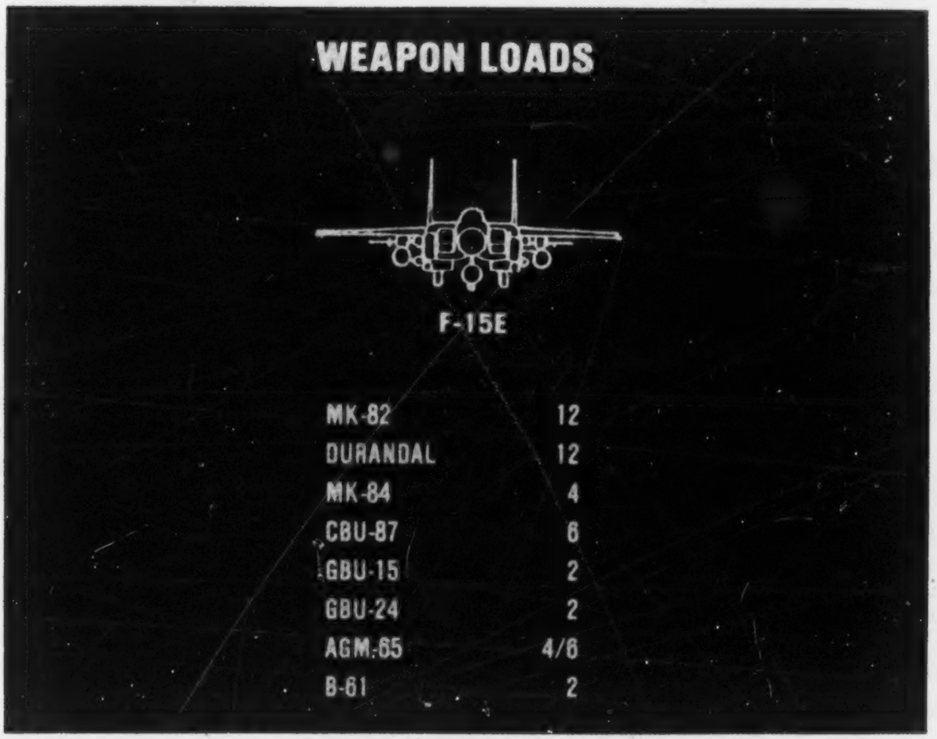
CHARACTERISTICS

	F-15		F-16	
	608	WING AREA (SQ FT)	663	
		WEIGHT		
	35,057	EMPTY	23,277	
	22,455	INTERNAL FUEL	11,480	
23,488	57,512	TAKEOFF CLEAN (NO TANKS/MISSILES)	34,938	13,062
	81,000	MAXIMUM TAKEOFF	48,000	

I would like to discuss, however, the characteristics of the airplane. The two candidate aircraft were the F-15 and the derivative of the F-16 which we call the XL, about 5 feet longer than today's airplane, but weighs considerably more.

The aircraft here is 10-foot difference in the length. Wing span is also about a 10-foot difference, 42 feet here, 32 feet here.

A couple of points to be made on this chart. First of all, the F-15 aircraft capable of carrying much heavier maximum take-off gross weight. You will notice here the difference between the internal fuel and take-off situation and then the amount of external fuel and ordnance that may be carried in the case of the F-15 versus that in the case of the F-16, trade-off between fuel and ordnance, to get a clue as to why it is the F-15 is the better of the two for this particular mission.



WEAPON LOADS

F-15E

MK-82	12
DURANDAL	12
MK-84	4
CBU-87	6
GBU-15	2
GBU-24	2
AGM-65	4/6
B-61	2

The F-15 is able to carry more fuel here in a combination with ordnance and has much better radius of action.

The F-16 fell short considerably of the requirements you saw in General Russ' briefing.

Senator GOLDWATER. Is that F-15 the model you are putting the skin tanks on?

General MONAHAN. Yes, sir. The conformal fuel tanks, in this head-on view you can see them here very slightly; 1,000 gallons of fuel in each of those tanks on the aircraft.

Senator GOLDWATER. With that modification you have some interdiction role by the aircraft?

General **MONAHAN**. That is true.

Senator **GOLDWATER**. 81,000 pounds against 48,000 pounds is a hell of a difference in weight.

What is the increased cost going to be to modify the F-15 from its normal configuration into the 81,000-pounder?

General **MONAHAN**. I will be getting into that in just about two more charts.

General **RUSS**. It is $1.3 million per airplane flyaway cost.

Senator **GOLDWATER**. What is that?

General **RUSS**. $1.3 million per airplane to take it from an F-15C-D to make it an F-15E.

Senator **GOLDWATER**. Thank you.

Senator **KENNEDY**. As compared to what it would be in terms of the F-16?

General **RUSS**. It is twice that.

General **MONAHAN**. More than twice that as a matter of fact.

Senator **GOLDWATER**. One more point, though.

When you modify the F-15 to take on 4,000 gallons of fuel——

General **MONAHAN**. There is 3,800 gallons of fuel.

Senator **GOLDWATER**. You pretty much kill it as an air superiority fighter in that role, don't you?

General **MONAHAN**. The efforts that we just went through as far as looking at both the airplanes, the air-to-air role, both airplanes retain their characteristics really quite well.

Where the F-15 excels is in the air-to-surface role. The F-15 especially after it has burned out some of that fuel is still a remarkable performer.

General **RUSS**. We call it a dual-role fighter which means we would re-role it. When we re-role it, we take some of the things off for air-to-ground mission and let it go to air-to-air mission.

Our analysis shows that the F-15E role for the air-to-air mission is just as capable as the current F-15's that we have.

Senator **GOLDWATER**. That is after you have burned off the excess fuel. I would not argue that.

General **RUSS**. The current F-15's that we are producing, as you know, the F-15C's, also have conformal fuel tanks on them. You can take those tanks off if you would like. We generally wouldn't do that. We would probably want to fly with those tanks. You could take them off.

Senator **GOLDWATER**. It would be quite a job. I am talking about, maybe——

General **RUSS**. Those tanks are removable.

Senator **GOLDWATER** [continuing]. Additional tanks in the skin on the outside of the fuselage, not something that is hung as in a bombing bay with shanks, but on the skin of the aircraft.

Would you go with that.

General **RUSS**. Sir, they are not made with the airplanes. They are add-ons to airplanes. The conformal fuel tanks fit tightly to the airplane. It is not like a regular tank. But you can take them off and put them back on again. I think it takes about 4 hours to do it.

Senator **GOLDWATER**. What does the extended width of the fuselage do to the aerodynamic qualities of the aircraft?

General **RUSS**. Little to nothing, sir. There is an argument, the fighter pilots who fly the ones with the skin tanks and the ones without the tanks, the group that likes the tank say that they like the extra fuel. They can always use the burner and they can always stay around longer.

The ones who don't like it say they have a little bit better performance, they have a little better turn radius.

So, it is a trade. When I get half the pilots arguing for one and half the pilots arguing for the other, I feel it is right.

Senator GOLDWATER. Did you ever have pilots agreeing on anything?

General RUSS. No, sir.

General MONAHAN. You note here this is a maximum allowable take-off gross weight. Obviously, the airplane is not going to perform nearly as well in an air-to-air role with that weight as it does with some of these lighter weights up here.

The differences really, the airplane at 57,000 pounds has very little in the way of external ordnance that it would carry on air-to-ground missions, still is an excellent performer.

It is obviously not with the 81,000. The same also holds true with the F-16. For example, with 48,000 pounds it is not going to perform nearly as well as when we get it down to the 35,000 pounds.

The airplanes are not able to carry all that ordnance for air-to-air performance.

Senator GOLDWATER. Did the rebuilding of that F-16 wing change the aerodynamic characteristics of the aircraft?

General RUSS. Yes, sir, it did significantly. It has a better supersonic capability. It has a better low altitude capability. It tended to be a little heavier than we expected it to be.

Therefore, we didn't get the range out of the aircraft that we hoped we would, but it is still a very capable aircraft. You don't have the same sustained G capability that you have on the basic F-16 C and D because of the bigger delta type of wing, but you have better instantaneous G.

Senator GOLDWATER. It still will pull nine?

General RUSS. Yes, sir, it will pull nine.

General MONAHAN. The external load on the F-15E was shown on previous chart.

Those allow it to have a certain amount of standoff. What I have shown here would also go with the three external fuel tanks. That kind of load would be just about maximum weight.

Senator KENNEDY. Which are the standoff weapons?

General MONAHAN. Standoff weapons, GBU-15.

Senator KENNEDY. How much of a standoff?

General MONAHAN. That is about a 5-mile standoff.

Senator KENNEDY. That is pretty short.

General RUSS. Five miles at low altitude, 200 feet. It is 35 miles at altitude.

General MONAHAN. Glide bomb, GBU-24, 2 to 5 miles. That again is very low altitude.

General RUSS. Let me say that these weapons were designed for that standoff capability because it puts them out of the basic terminal threat area. That is about all you need to stand outside of the terminal threat area.

STANDOFF WEAPONS

Senator **Kennedy**. How about deeper penetration? Are you developing longer standoff capability?

General **Russ**. Yes, sir. We are now in the process of looking at longer standoff weapons. We believe a mix of standoff weapons and penetrating aircraft will probably be the best force for the future.

We are not to that point where we can rely on, to any great extent, those standoff weapons. One of the reasons we haven't asked for a lot of standoff weapons to any extent and range is because it becomes very costly. They are in the millions of dollars per weapon.

You can't afford to fight a conventional war with million dollar weapons. You just don't end up buying enough of them.

So, we need weapons in the much cheaper category to be able to buy sufficient weapons to kill the targets we have to kill.

I think in the future we will be able to buy weapons that are lower cost and still have extended range. We are certainly working on it very hard.

General **Monahan**. Either the F-15 or F-16 are able to satisfy our air-to-air requirements for a dual-role fighter. Only the F-15 is able to achieve the air-to-surface requirement, because of the longer range with the F-15 versus F-16.

Senator **Kennedy**. That is a more general question.

The GAO made some observations with regard to the competition between the F-15 and F-16 in regard to the dual-role fighter. You are familiar with the points that have been raised.

One was the Air Force did not completely define its operational concepts and requirements for the final dual role, and second, comparing the F-15 and F-16 derivatives against a formal set of criteria to determine if each met a common set of minimum performance expectation.

Would you comment on that?

General **Russ**. When the GAO looked at our records last spring, we had not completed the requirement documentation. It was in process.

We explained to them the way it normally works, it had not been signed off by everyone. It has since been signed off, all the documentation is there and the operational concept is there.

On the second point what they were getting at is that we didn't go through formal source selection procedures to select the winner of the so-called dual-role fighter competition. We made a force structure decision and we did that because the airplanes were different, entirely different.

We didn't believe we could go through this sort of formal source selection procedure. We made that decision up front.

We said it was going to be a decision of the Chief of Staff of the U.S. Air Force in conjunction with the Secretary of the Air Force.

We never made any bones about that. We make decisions like that all the time. We said we couldn't make another type of decision. They just made the comment we didn't do it the other way.

Senator **Kennedy**. Didn't the force structure decision really decide the issue even before there was a competition?

General **Russ**. No; not at all.

The force structure decision decided how many we needed, but whether we bought the F-16E or F-15E had not been decided. So, we ran those two airplanes in tests together. We tested them out at Edwards and at various places around the country.

We actually flew many sorties. We calculated all that data. Then we sat down and said which one of those airplanes could best kill the maximum number of targets and do the best job in the role we needed them in.

The decision was the F-15E. I must say that everybody agreed on that. That includes the General Dynamics people. That includes, of course, the McDonnell people, everybody in the Air Force, and the Secretary of Defense, when they saw the data agreed that the F-15E really did the job and F-16 didn't.

That is not to say that the F-16 is not a very good airplane. It really is. It just didn't have the range and payload to be able to go for those deep targets and that is what we wanted it for.

Dr. COOPER. You may recall up about 2 years ago the XL didn't exist, the large wing F-16.

In fact, Senator Goldwater, you were there the day they rolled it out at Fort Worth back in July 1982. We actually held up the selection until we could get the XL flying to do what we call a comparative analysis rather than a formal competition.

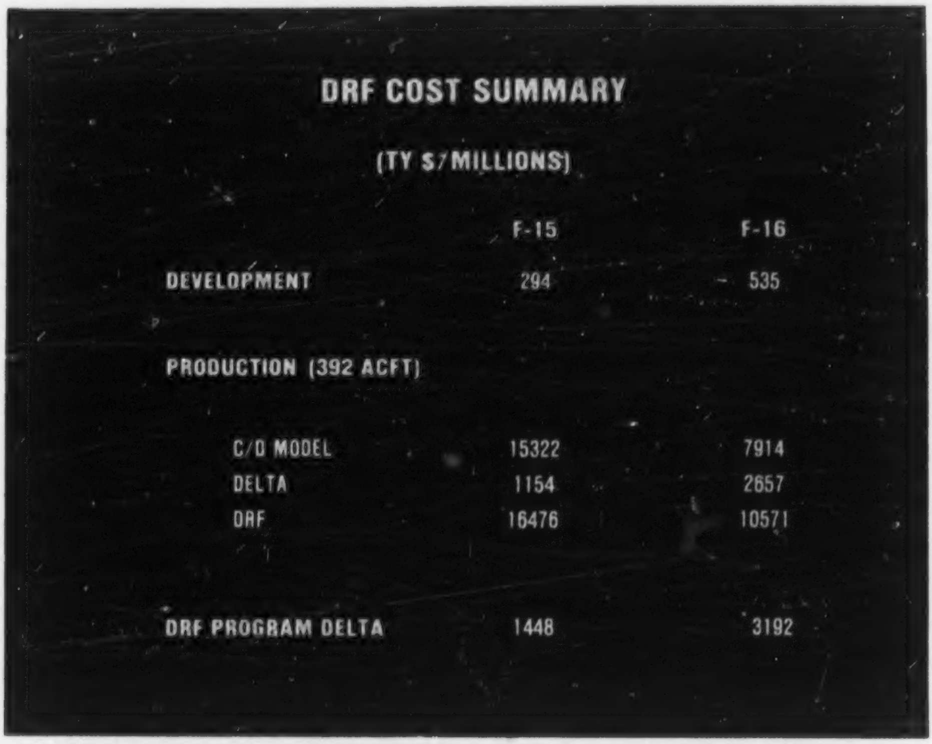
When you have a formal competition, you have a set of requirements that you compare each of the competitors against. Since these two aircraft are so dissimilar, there was no way to do that.

So, we called it a comparative analysis. In fact, the Chief of Staff of the Air Force is the one that made the decision as a force structure decision.

As you look back to our road map, you will see we would like to keep the option open at some point in the future, maybe to revisit the big wing F-16 to see if there are other applications in our force for it.

If you have specific questions, though, and I think those are good questions, we can respond for the record.

Senator KENNEDY. Let me come back to you later. I won't take the time now.



DRF COST SUMMARY

(TY $/MILLIONS)

	F-15	F-16
DEVELOPMENT	294	535
PRODUCTION (392 ACFT)		
C/D MODEL	15322	7914
DELTA	1154	2657
DRF	16476	10571
DRF PROGRAM DELTA	1448	3192

General MONAHAN. Looking at the two aircraft, the development cost, production cost for the 392 and then coming up with the delta between the C and E models of the two aircraft, in the case of the F-15 the delta for the program is shown somewhat more here in the case of the F-16.

[Chart deleted.]

Senator WILSON. On that chart presentation by General Russ, I can't recall exactly where the F-15E fits.

What is the force structure when we are all finished? Are you talking about 294 of these?

Dr. COOPER. That is the research and development cost to bring, as I call it, the vanilla-flavored F-15 to a F-15E. We are talking roughly 392 airframes.

General MONAHAN. We begin trading off F-15E's, C's and D's for the beginning of procurement, I believe it is eight E model aircraft in fiscal year 1986.

From then on we maintain the F-15 production line at 60 per year.

After fiscal 1986 all of the F-15's are then E model airplanes.

Senator WILSON. The life on that is expected to be what?

Dr. COOPER. Twenty years, roughly. That is the average life of the aircraft plus or minus.

General MONAHAN. The delta shown here is the delta required between the C and D model in pursuing this program. The delta for the F-15 is shown here.

These F-15C's and D's in here, we were converting those to the E model.

Senator **Wilson**. It is preferable air-to-surface because of greater payload?

General **Monahan**. Much greater.

Dr. **Cooper**. The key point we need to stress is that what we are really proposing to do is to convert the F-15C and D to an E variant. The incremental cost to convert C and D to an E is on the order of $1.3 million.

If we would not do an F-15E, we would propose to keep the F-15 line anyway. So, we are looking at an incremental cost.

The absolute value of the F-15E is more than the absolute value of the F-16E if we had gone that way.

Senator **Kennedy**. By how much?

General **Monahan**. Almost two to one.

Look at the C and D model airplane and F-16C and D models, 392 of them.

Dr. **Cooper**. Let us get the unit cost on that. I think it is about 50 percent more to buy an F-15 than an F-16, on the order of that.

Senator **Kennedy**. The DRF, as I understand it, is $6 billion in total. Am I correct?

General **Monahan**. That is true.

Our plan was that either the F-15 or F-16 would be converted to the E model at some point in time, but we would still maintain the same numbers of the aircraft that was not selected which, of course, you see indicates the F-16.

The thing that became very importnat to us is what the delta cost would require to pursue the E model program of one aircraft over the other.

It turns out in the case of the F-15 the delta, which is what becomes important to us, is much less than in the case of the F-16. The reason for that is in the case of the F-15 there is no real aerodynamic structural change between the C and D and E.

General **Russ**. Let me say one thing about this.

Sometimes it gets very confusing. If we did this program with the F-15E, then the cost of it is $1.4 billion more to do it.

If you did it with an F-16, it is $3.19 billion more to do it.

Assuming that you buy the airplanes that you need to modernize your force and assuming that you buy a mix of F-15's and F-16's, which we certainly would want to do, all we would do if we went to the F-16 is we would make these F-15C's and D's and we would make a part of these F-16's up here F-16E's.

So, if you want to buy enough to sustain and modernize the Force and you are going to buy a mix of airplanes, then what it says is that it costs $1.4 billion to do it with F-15's and $3.1 billion to do it with the F-16.

Senator **Kennedy**. That is not confusing to me. I suppose it gets back to the basic question whether if you had made a decision to go the other way in terms of the F-16, whether there would be sufficient justification for continuation of the F-15.

That is a rather basic issue. Once you do the add-ons, I have no difficulty understanding that it costs $1.3 million additional per copy on one.

If you start from your basic assumption, I have no difficulty with that. I think there is an issue in question about the need to continue to purchase the F-15 at the proposed quantity if it had not been justified in regard to the dual role fighter program.

General RUSS. That is a good point, Senator. That is one other thing I think is important.

The F-16E, as tested, did not meet the requirement. So, it was not a player when you get down to the final analysis. It did not go as far as we needed to go and did not cover the adequate number of targets.

When you got to that point, it wasn't an alternative of one or the other. In fact, in our analysis for cost effectiveness we found that the F-15, even covering just the targets that the F-16 could cover; in other words, not giving it credit for all the targets it took care of by itself, even covering those targets, it was a more cost-effective deal.

Senator KENNEDY. If I could submit some additional questions for the record.

General RUSS. Yes, sir.

Senator GOLDWATER. One point I don't think you have made clear enough. The reason for changing the F-15 to interdiction-type aircraft is that we don't have enough F-111's which is an interdiction machine.

What is going to be the range of the modified F-15 with 81,000 pounds?

General RUSS. Let me give you a figure, Senator. I don't have the exact range. It will go normally 250 to 270 miles past the FEBA.

Senator GOLDWATER. That is with the new load?

General RUSS. Yes, sir.

Senator GOLDWATER. Only go 250?

General RUSS. At low altitude. It will go about 250 miles past the FEBA low altitude all the way.

Senator GOLDWATER. Wouldn't you have the radius?

General RUSS. I have a radius chart that shows the F-15E and F-16E, but I don't have it with me.

Senator GOLDWATER. Supply that for the record.

General RUSS. Yes, sir.

[The information follows:]

RADIUS CHART

The dual role fighter range capability is depicted on the following charts. The low altitude combat radius is [deleted] nautical miles which means, for example, that if these aircraft were based at Hahn AB, which is about 140 miles from the political border, their penetration range into the Warsaw Pact countries would be about [deleted] nautical miles. Additionally, the F-15E provides an option for UK basing to enhance survivability, while still providing target coverage [deleted].

In Southwest Asia, the F-15E could provide air cap over [deleted] or could provide [deleted] the target base coverage of the F-16E in an air-to-ground scenario.

Finally, in the Soviet Pacific the F-15E can provide [deleted] whereas the F-16E can only provide [deleted] coverage.

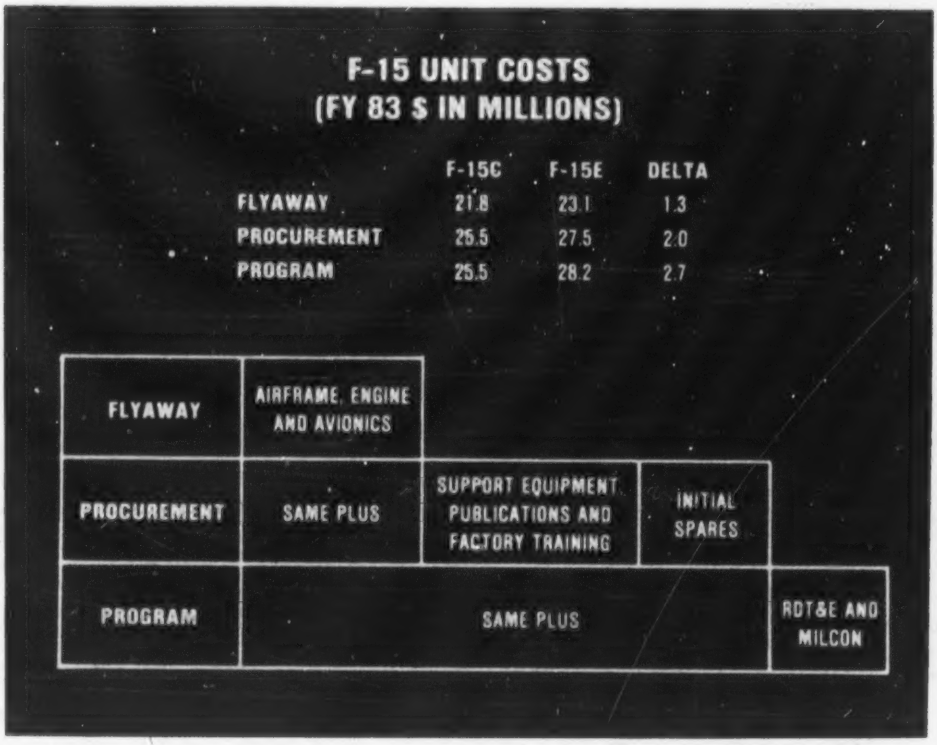
Senator GOLDWATER. The F-111 will do a little better?

General RUSS. Yes, sir.

Senator GOLDWATER. Any war we happen to get into with the Soviets will be more of an interdiction war to start with than anything else. That is why the importance of the interdiction.

Thank you. If you will send that over, we will put that in the record.

General Russ. We will.



F-15 UNIT COSTS
(FY 83 $ IN MILLIONS)

	F-15C	F-15E	DELTA
FLYAWAY	21.8	23.1	1.3
PROCUREMENT	25.5	27.5	2.0
PROGRAM	25.5	28.2	2.7

FLYAWAY	AIRFRAME, ENGINE AND AVIONICS			
PROCUREMENT	SAME PLUS	SUPPORT EQUIPMENT PUBLICATIONS AND FACTORY TRAINING	INITIAL SPARES	
PROGRAM	SAME PLUS			RDT&E AND MILCON

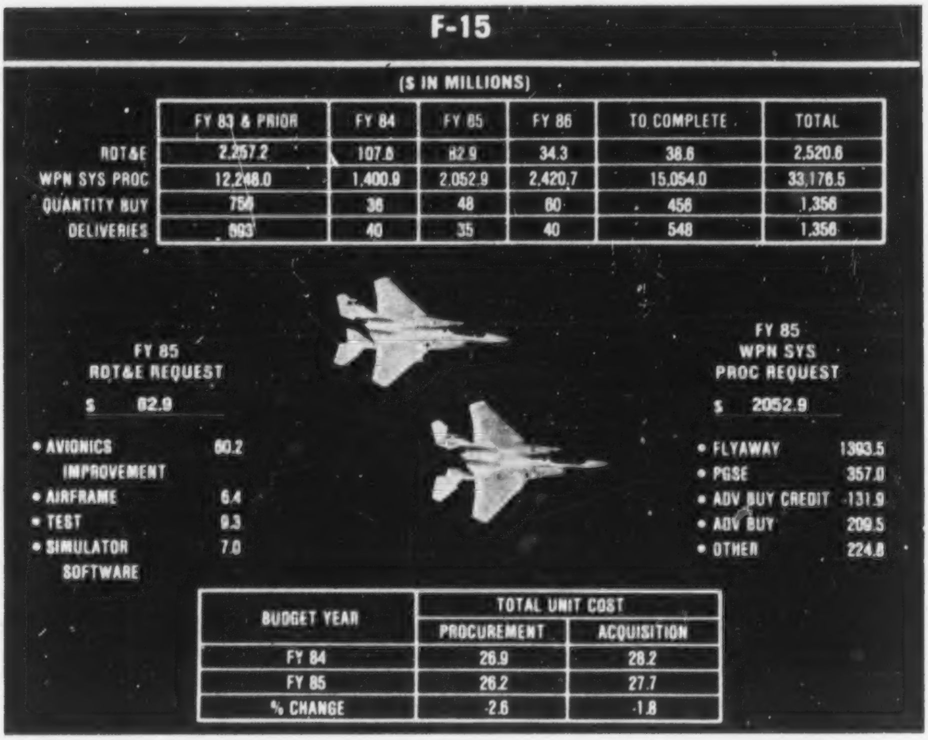
General Monahan. Here is a quick look at the unit cost of the delta, the curve we will take from the C model of the airplane.

We checked the various commanders in chief around the world. Admiral Crowe had comments regarding the dual-role fighter here. You can read this, and General Rogers.

I believe they are very supportive of this particular program.

A few words now on our plans for next year.

Over 700 aircraft delivered at the present time. Next year we are going to activate more Conus air defense units and also continue with the improvement of the avionics in the aircraft.



F-15

($ IN MILLIONS)

	FY 83 & PRIOR	FY 84	FY 85	FY 86	TO COMPLETE	TOTAL
RDT&E	2,257.2	107.8	82.9	34.3	38.6	2,520.8
WPN SYS PROC	12,248.0	1,400.9	2,052.9	2,420.7	15,054.0	33,176.5
QUANTITY BUY	756	36	48	60	456	1,356
DELIVERIES	693	40	35	40	548	1,356

FY 85
RDT&E REQUEST
$ 82.9

• AVIONICS IMPROVEMENT	60.2
• AIRFRAME	6.4
• TEST	9.3
• SIMULATOR SOFTWARE	7.0

FY 85
WPN SYS
PROC REQUEST
$ 2052.9

• FLYAWAY	1393.5
• PGSE	357.0
• ADV BUY CREDIT	-131.9
• ADV BUY	209.5
• OTHER	224.8

BUDGET YEAR	TOTAL UNIT COST	
	PROCUREMENT	ACQUISITION
FY 84	26.9	28.2
FY 85	26.2	27.7
% CHANGE	-2.6	-1.8

I mentioned earlier this is one of the programs that will have revisions to the budget so that the budget will be different for fiscal 1985 from what is shown here.

Forty-eight aircraft in procurement pressing on up to 60 and following the fighter road map from there on.

AIR DEFENSE AND STRATEGIC DEFENSE

Senator KENNEDY. What is the difference between air defense and strategic defense?

General RUSS. It is basically the same thing, sir.

Senator KENNEDY. The F-15 is better on one and the F-16 better on the other?

General RUSS. Some of it is semantics. When you talk strategic defense, you talk F-15 or F-16 operating out of the continental United States providing defense of the continental United States.

If, in fact, that same airplane is over in Germany, then he is doing air defense work, it is not considered strategic air defense. It is theater air defense.

The basic difference is the type of targets he is going after. In the United States generally it is a bomber type of target coming from the Soviet Union.

If in Germany, he is intercepting another fighter or fighter bomber.

Senator KENNEDY. Last year you requested the F-15 for national strategic defense.

General RUSS. Yes, sir.

Senator **Kennedy**. Now you are proposing to outfit the Air National Guard with the F-16's to do the same?

General **Russ**. We are going to have F-15's and F-16's in the air defense force of the United States, those that are in the North American Air Defense Command force.

We will have four squadrons of F-15's in the active force. We will have five squadrons of F-16's in the air reserve forces.

Senator **Kennedy**. In the continental United States?

General **Russ**. Yes.

Senator **Kennedy**. So you are saying to us that the F-16, as far as continental United States, is well equipped to handle that particular mission?

General **Russ**. It is very well equipped, but it does not have at the current time a radar missile or all-weather missile. It doesn't have a night capability or all-weather capability.

Until we can put the advanced medium air-to-air missile on the airplane, then it is very limited in what it can do.

Also we need F-15's in the active force, in the air defense force to do the ASAT mission. In other words, two of our F-15 squadrons will be equipped with antisatellite missiles. Those are missiles that hang underneath and allow them to intercept satellites.

The F-16 cannot do that either. So, we need a mix. What we try to do is place that mix where we have the highest number of F-16's coming into the inventory as soon as the missile is available and a lower number of F-15's. That is about five to four.

I might say that the other five squadrons of F-4's that are in the air defense force will also be replaced with F-16's later on. We will end up with two-thirds of the force F-16's and one-third of the force with F-15's.

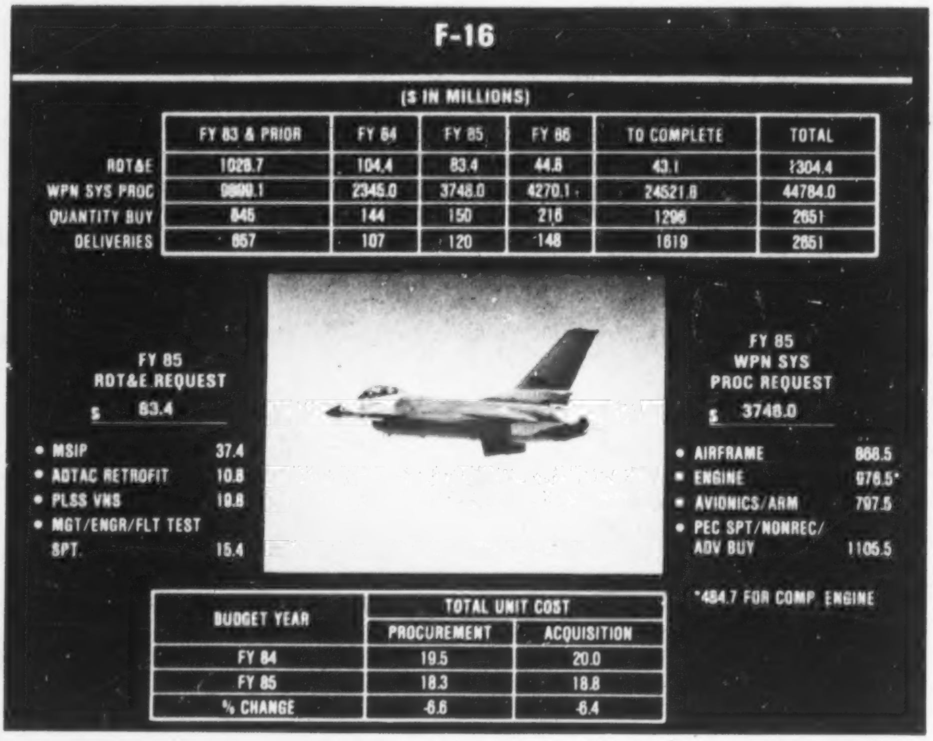
Senator **Goldwater**. You say also that your modified F-15's will become a strategic type aircraft in the role of interdiction?

General **Russ**. Yes, sir, you could. Strategic bombing in the classic sense of the word.

Senator **Goldwater**. Would that instrument come under the command of the Strategic Air Command in combat or remain under the Tactical Command?

General **Russ**. It would remain under the Tactical Command.

General **Monahan**. Talking about the F-16 program, this year we also have 700 F-16's produced now. We now have one squadron in the National Guard outfit and reserve unit.



F-16

(\$ IN MILLIONS)

	FY 83 & PRIOR	FY 84	FY 85	FY 86	TO COMPLETE	TOTAL
RDT&E	1028.7	104.4	83.4	44.8	43.1	1304.4
WPN SYS PROC	9899.1	2345.0	3748.0	4270.1	24521.8	44784.0
QUANTITY BUY	845	144	150	216	1296	2651
DELIVERIES	857	107	120	148	1619	2851

FY 85
RDT&E REQUEST
\$ 83.4

• MSIP	37.4
• ADTAC RETROFIT	10.8
• PLSS VNS	19.8
• MGT/ENGR/FLT TEST SPT.	15.4

FY 85
WPN SYS
PROC REQUEST
\$ 3748.0

• AIRFRAME	868.5
• ENGINE	976.5*
• AVIONICS/ARM	797.5
• PEC SPT/NONREC/ ADV BUY	1105.5

*484.7 FOR COMP. ENGINE

BUDGET YEAR	TOTAL UNIT COST	
	PROCUREMENT	ACQUISITION
FY 84	19.5	20.0
FY 85	18.3	18.8
% CHANGE	-6.6	-6.4

We are just completing the first multiyear procurement, going to proceed to another. In 1985, 150 aircraft, up from 144 and going to 216 in fiscal year 1986.

Because of the alternate fighter engine competition, because of the results we got from that, you will notice in the revision in the budget that is coming over, a very substantial reduction as far as the dollars required for engines for the F-16.

It will be a very substantial reduction there.

Dr. COOPER. On that point we do owe you a budget revision. We are in the process of putting that together right now. I would request permission to submit that for the record when it becomes available.

Senator GOLDWATER. That is fine, if you ever find out what the hell it is.

Dr. COOPER. We know what it is. We just have to get approval through the building right now to bring it over.

General MONAHAN. One other thing, a higher amount of advanced buy funds is required in fiscal 1985. That is because we want to start another multiyear procurement covering fiscal years 1986 through 1989 for the F-16.

So, advanced buy funds required in 1985 is higher than normal.

Dr. COOPER. The F-16 has been a very unique program in another respect in that we are coproducing the F-16 right now with four of our European allies, Norway, Denmark, Belgium, and the Netherlands.

You may recall that agreement was that we were going to buy 650 coproduced and they were going to buy 348. They will roll that 348th F-16 off the production line next March.

General Monahan, prior to this assignment, was the program manager for F-16. He and I worked very closely with the Europeans.

That is a ceremony that I think will be very heavily attended. It has been a remarkable program.

Senator GOLDWATER. That is working out very well, isn't it?

Dr. COOPER. It really is working out very well.

Senator GOLDWATER. Is theirs equal to ours in quality?

Dr. COOPER. Yes, sir.

General MONAHAN. The quality is excellent.

Dr. COOPER. They are buying just the A and B aircraft. We have transitioned to the C and D. That will be a more advanced version.

Senator KENNEDY. You propose an increase from 144 in the 1984 budget to 150 in 1985. In unit cost the F-16 goes from $17.7 million to $27.6 million. This is on the F-16?

General MONAHAN. That will change in the revised budget, that difference. The difference is primarily because of three things.

One is because of the initiation in fiscal year 1986 of a second multiyear procurement requires substantial funds, what we call economic order quantities are required to build up our liability, not expenditure.

So, there is a substantial amount in the request just for that.

Senator KENNEDY. Build up the liability? What is that again?

General MONAHAN. When we initiate a multiyear procurement, we lock ourselves in for a period of 4 years. We have to cover all the liabilities associated with that right from day one.

We call the money required economic order quantity funds. At any point if we terminate, we have to have funds to cover our liability for termination.

Senator KENNEDY. You are going to review the other two areas just briefly? You said there were three reasons.

General MONAHAN. Yes.

Senator KENNEDY. That is one.

General MONAHAN. The other two, in the case of the engines here, the amount of money in the F-16 line for the alternate fighter engine in case that engine did require a substantial amount of nonrecurring funds that first year.

As a result, through competition, we were able to save a substantial amount of funds. It will be a substantial reduction in this particular item in the revision that will be coming over.

Senator KENNEDY. And the third?

It seems to me that multiyear funding is supposed to bring the cost down. Competition is supposed to bring the cost down. Yet we find there was a significant increase.

Dr. COOPER. The multiyear brings the ultimate unit cost down, but in the first year it costs you more to initiate multiyear because you are doing the economic order quantity purchasing.

Senator KENNEDY. How much will it bring it down?

General MONAHAN. I can supply that.

For multiyear 1986-90, $36 million.

Senator KENNEDY. What is the percent saving?

General MONAHAN. I have not calculated the percentage.

To show you how the percentage change——

Senator KENNEDY. That is all right.

What was the third point?

General MONAHAN. The third point is ramping up to 216 aircraft per year. That also affects the amount of the advanced buy funds that are required.

The actual airframe unit cost of the aircraft does not increase. As a matter of fact, it goes down in fiscal year 1985.

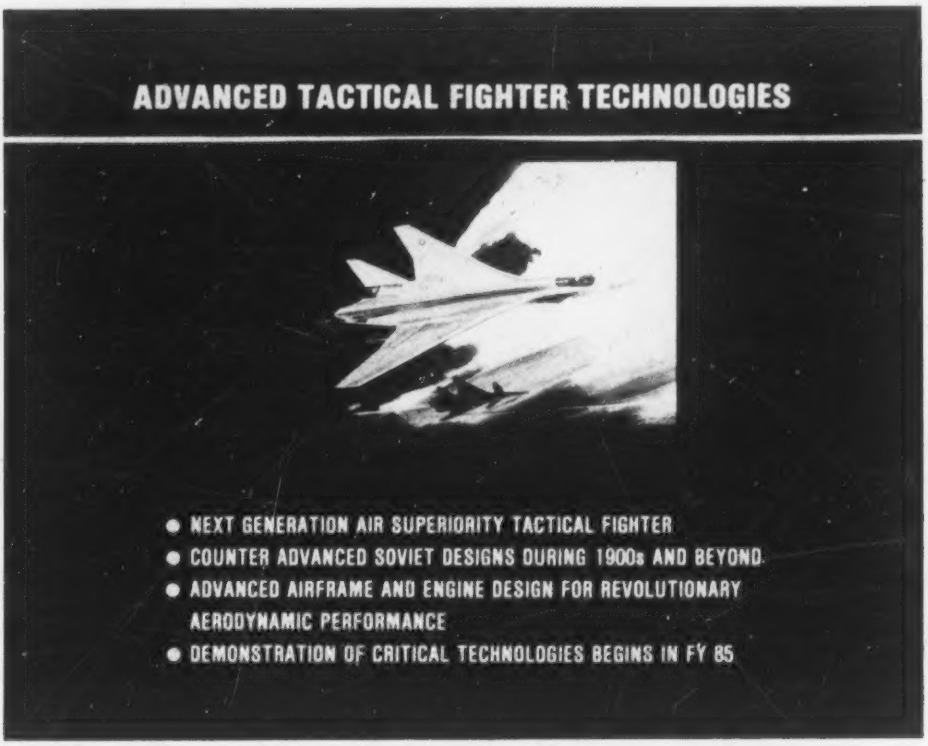
Dr. COOPER. I know you have been interested in the engine competition between General Electric and Pratt & Whitney engines and have had some nice things to say about it.

One of the things we were pleasantly surprised about is the amount of up front nonrecurring cost associated with transitioning to the new engines has turned out be less than you see there.

That would be part of the budget revision that we send over. There is an up front cost in going from the older engine to the newer engine as you have to buy tooling and those sorts of things.

That will later come down. But we are paying the burden here in the first year.

General MONAHAN. We talked about the advanced tactical fighter, air superiority fighter for the future in the mid-nineties and beyond that.



ADVANCED TACTICAL FIGHTER TECHNOLOGIES

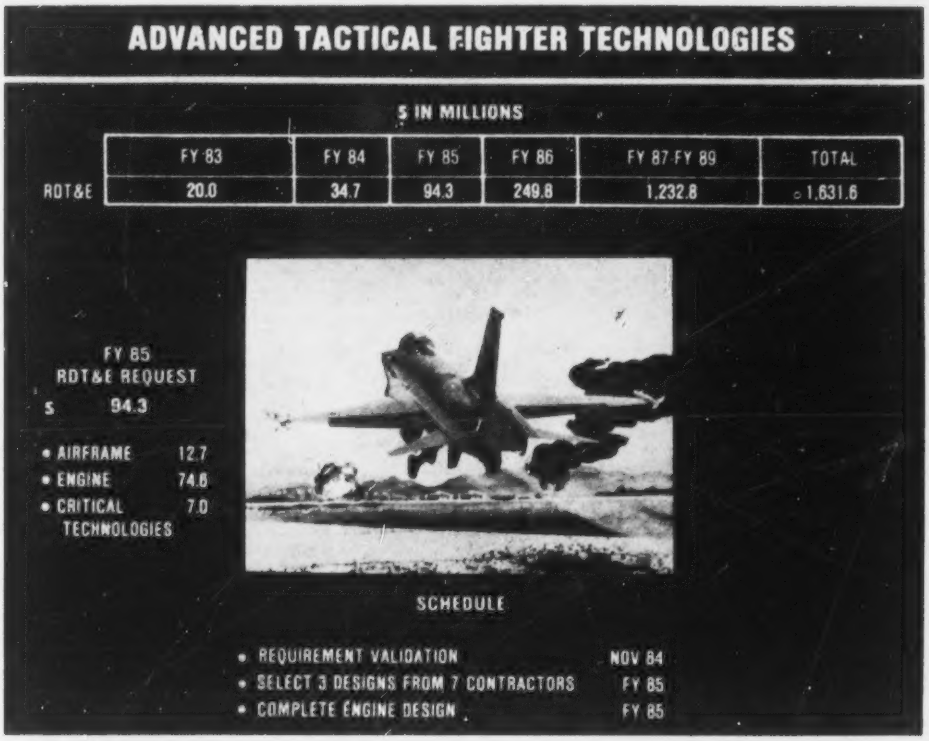
- NEXT GENERATION AIR SUPERIORITY TACTICAL FIGHTER
- COUNTER ADVANCED SOVIET DESIGNS DURING 1900s AND BEYOND
- ADVANCED AIRFRAME AND ENGINE DESIGN FOR REVOLUTIONARY AERODYNAMIC PERFORMANCE
- DEMONSTRATION OF CRITICAL TECHNOLOGIES BEGINS IN FY 85

Just a couple words about what we are going to do next year. We are going to work on technologies. Primarily we will be working on the engine.

Regarding the engine, as General Russ mentioned, looking primarily at the durability here, a minor increasse of perhaps nine in thrust-to-weight ratio rather than eight. A modest increase there.

Demonstrator engines, Pratt & Whitney and with General Electric will begin fabrication during the next fiscal year.

In addition to that, we are looking at other critical technologies primarily in the area of avionics and select three or four contractors that show interest to go into a further design and development stage beginning in fiscal 1985.



ADVANCED TACTICAL FIGHTER TECHNOLOGIES

$ IN MILLIONS

	FY 83	FY 84	FY 85	FY 86	FY 87-FY 89	TOTAL
RDT&E	20.0	34.7	94.3	249.8	1,232.8	1,631.6

FY 85
RDT&E REQUEST
$ 94.3

AIRFRAME	12.7
ENGINE	74.6
CRITICAL TECHNOLOGIES	7.0

SCHEDULE

REQUIREMENT VALIDATION	NOV 84
SELECT 3 DESIGNS FROM 7 CONTRACTORS	FY 85
COMPLETE ENGINE DESIGN	FY 85

Senator **Kennedy**. How much is in the budget now for that?

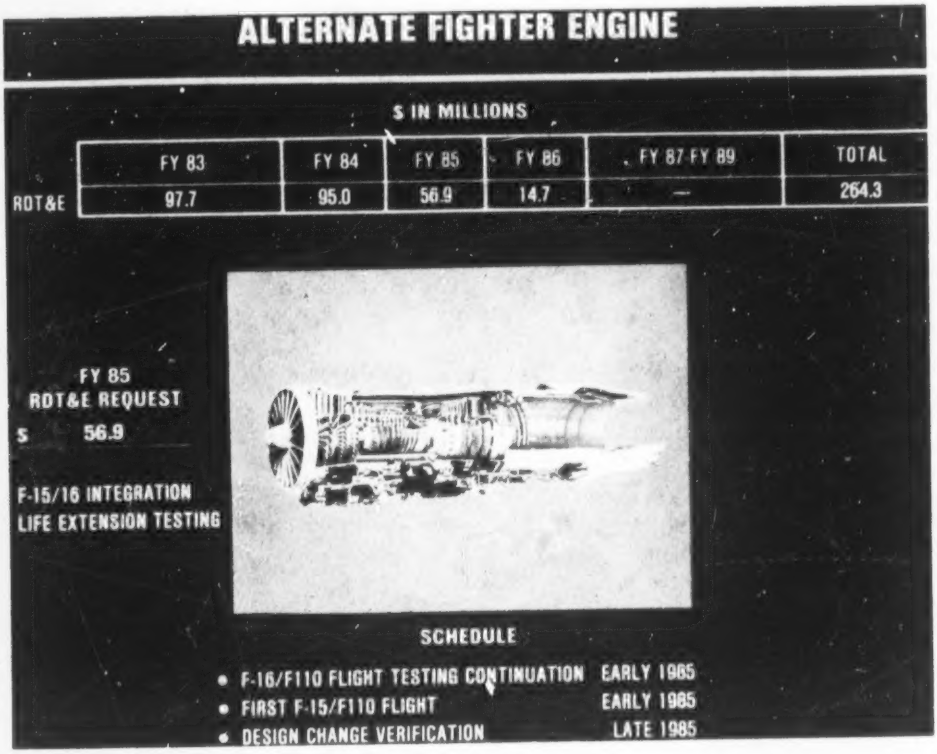
Dr. **Cooper**. For the new engine?

Senator **Kennedy**. No, the whole new fighter.

Dr. **Cooper**. A hundred million dollars. The majority is for the new engine. That is a completely new engine. That has nothing to do with the current competition. That is going to be a very big project to develop that.

General **Russ**. $94.3 million in 1985.

General **Monahan**. To speak specifically about the one fighter engine program that allowed us to get through the competition we just completed, that is the alternate fighter engine program in which we developed the General Electric F-110.



ALTERNATE FIGHTER ENGINE

$ IN MILLIONS

	FY 83	FY 84	FY 85	FY 86	FY 87-FY 89	TOTAL
RDT&E	97.7	95.0	56.9	14.7	—	264.3

FY 85
RDT&E REQUEST
$ 56.9

F-15/16 INTEGRATION
LIFE EXTENSION TESTING

SCHEDULE

- F-16/F110 FLIGHT TESTING CONTINUATION EARLY 1985
- FIRST F-15/F110 FLIGHT EARLY 1985
- DESIGN CHANGE VERIFICATION LATE 1985

We will be wrapping up the full-scale development effort in 1986 and wrap it up in 1985 completing our F-15 and F-16 integration effort.

RESULTS

New engines provide:[1] 40–60% reduction in cost/engine flight hour; 45–60% reduction in maintenance manhour/engine flight hour; 40–60% reduction in engine removals/1000 flight hours; no trim requirement; warranted thrust and specific fuel consumption characteristics (3000 cycles or 8 years); $2–3 billion savings in cost of ownership (over 20 year life cycle); and 20–35% increase in sortie generation potential.

I would like to show what this program did for us in terms of the competition. These are some of the savings that we will achieve over the series of the next 15 or 20 years as a result of the engine competition.

The cost range of engine flight hour was reduced from $585 per engine flight hour down to somewhere in the vicinity of $200 to $300 range.

The same with most of the rest. For example, we used to trim every engine every time it was put in the airplane, that took 80 minutes with four people and a substantial amount of fuel. That will no longer be required with the new engine. A substantial cost savings.

One other thing we like very much, we are going to get a lot more out of it in terms of the number of sorties it will be able to fly.

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[1] Compared to FY 85 F100(3).

Dr. **Cooper**. I would like to stress one thing. The decision was to award the contract just for one year. We had an option to request multiyear authority.

But what Mr. Orr decided to do is start out the first year by recommending that the General Electric engine be placed in new production F-16's and that the improved Pratt & Whitney engine go in the F-15.

That led to a split in the first year of 75 percent of the business to General Electric and 25 percent to Pratt & Whitney. That is somewhat of an aberration in that the majority of the engines that we are going to buy in the first year are still Pratt & Whitney because we have a large quantity of the older engines we are still buying.

If we were to maintain that strategy in the out years, F-110 in the F-16, F-100 in the F-15, that would lead, if our roadmap numbers held, to a split of 66 percent for General Electric and 34 percent for Pratt & Whitney.

I think it is important to note that the Secretary is going to go back and revisit that split next year and consider all the options that are open to him.

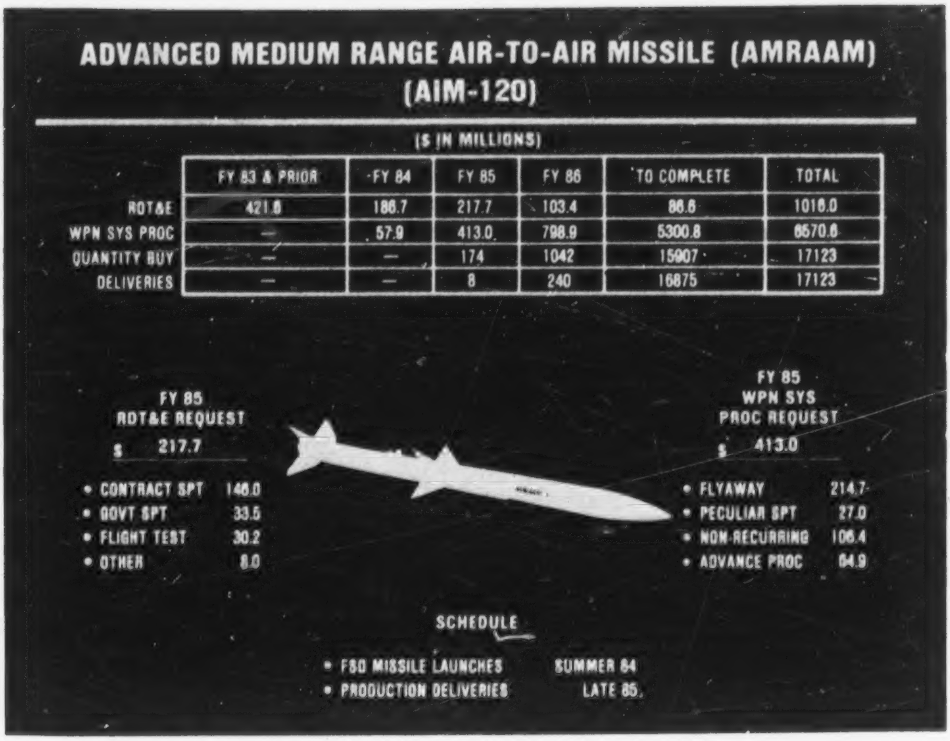
AMRAAM, LANTIRN, AND MAVERICK

General **Monahan**. I would like to talk a little bit about the AMRAAM, Lantirn, and Maverick programs.

All three of these are very important to the tactical fighter road map.

The AMRAAM provides us, for the first time on the F-16, with capability to go beyond visual range. It also, of course, gives us the lethality in the threat.

We hope to initiate production on this program in fiscal year 1985. We are about halfway through a full-scale development effort at the present time with Hughes as the contractor.



ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILE (AMRAAM) (AIM-120)

($ IN MILLIONS)

	FY 83 & PRIOR	FY 84	FY 85	FY 86	TO COMPLETE	TOTAL
RDT&E	421.6	186.7	217.7	103.4	86.6	1016.0
WPN SYS PROC	—	57.9	413.0	798.9	5300.8	6570.6
QUANTITY BUY	—	—	174	1042	15907	17123
DELIVERIES	—	—	8	240	16875	17123

FY 85
RDT&E REQUEST
$ 217.7

• CONTRACT SPT	146.0
• GOVT SPT	33.5
• FLIGHT TEST	30.2
• OTHER	8.0

FY 85
WPN SYS
PROC REQUEST
$ 413.0

• FLYAWAY	214.7
• PECULIAR SPT	27.0
• NON-RECURRING	106.4
• ADVANCE PROC	64.9

SCHEDULE

• FSD MISSILE LAUNCHES	SUMMER 84
• PRODUCTION DELIVERIES	LATE 85.

This fiscal 1985 we have the first lot of production, very, very low rate, only 174 missiles for the Air Force, 20 missiles for the Navy.

In fiscal 1986, at the present time we have plans to ramp up steeply to 1,000. We may revise this, however, and I will talk in a moment about the problem we have with the development program at this time.

We will likely revise this down. This is the minimum that we may buy under the option we haven't used that was negotiated over 2 years ago when we initiated the full-scale development program.

We have a nice business strategy from the point of view that the first two production lots in fiscal 1985 and 1986 are both covered by price reduction options the Air Force may award to Hughes.

Those were derived under competition. So, we got very good prices for those.

Senator GOLDWATER. What is the unit cost?

General MONAHAN. The unit cost is one thing we are looking at very, very carefully at the present time.

Senator GOLDWATER. How much?

General MONAHAN. I could give you some numbers, Senator, but I may be revising them next month.

General RUSS. The latest SAR said $200,000. I think it is going to be higher than that.

Dr. COOPER. $200,000 in 1978 dollars.

AMRAAM STATUS

Development program—cost capped; technically sound; and behind schedule.
Long lead decision—postponed.
Air Force review—underway.
Affordability is the key—competition is essential.
FY 85 R&D/procurement funds—needed to maintain competitive advantages.

General **MONAHAN**. Clearly you are on the major issue of the program; that is, supportability is the key to it. That is the item we are spending most of our efforts on at this time.

The development program is about halfway through, although the first test is this summer. The cost is capped on that.

It is technically sound. We are 2 to 6 months behind schedule. Back here in February we did not award the long lead because we are not on schedule with the development program.

So, we have the review underway at the present time. It is likely that the program is going to slip some. Now, we may slip our production decision on those production options that are already priced, a total of 6 months.

If we go beyond 6 months, then they are no longer valid and we no longer have the advantage of the price production options we obtained during competition.

Next month we should have our review completed and hopefully find our way clear on exactly how to proceed.

Senator **KENNEDY**. Shouldn't we await that review before making decisions on that? Shouldn't we expect to hear from you on the results of that particular report before we start moving ahead?

Dr. **COOPER**. Yes, sir.

General **MONAHAN**. The way the contract with Hughes is established at the present time we have until next May to award the contract for the first 174 missiles.

We are not going to do that unless Hughes is ready for that production.

Senator **KENNEDY**. Does that include testing?

General **MONAHAN**. The testing is covered in the full-scale development contract. It is already capped.

Dr. **COOPER**. We are experiencing growing pains at this point. Unfortunately, this comes half cycle in the budget cycle. If I were you, I would want to hear from us as well.

We owe you an answer back. We will be making a decision somewhere in the April timeframe.

I don't know when you mark up. The limitation we have is that if we slip the program beyond 6 months, we lose the fixed price production options that we have on the first two production options.

We would very much like to keep those because they were obtained in a competitive environment.

On the other hand, if it is our judgment technically that we are not ready to go into production, we won't go into production and we will have to deal with what happens to the production option and the cost.

What we have been trying to do is to negotiate favorable consideration from Hughes Aircraft to allow us to slip without letting go of the production options.

Senator **KENNEDY**. I think they would understand that here they have kind of got you in a corner now. We are concerned about whether it works and what it is meant to achieve and accomplish.

Even though there has been a dramatic increase in terms of cost, it seems to me it is a unique and valuable weapon system.

On the other hand, you have the sense that Hughes may be playing with you. It seems to me it ought to be clear to Hughes that the committee is going to watch this very closely and to the extent that we can be helpful and back you up to make sure that you are going to be able to get the kind of contract and modification which will permit them to go ahead if they work out the various bugs, but that we are not just going to see a continuation in the escalation in the cost without performance.

Dr. COOPER. We are in an awkward position on the first two production options.

We did obtain fixed-price ceilings on the first two in competition. Hughes competed with Raytheon. One of the things we asked for was preproduction price options and got those.

We don't want to be captive to that forever. What we are doing is bringing on a second source so as to put ourselves in a competitive position as soon as possible.

Our best estimate right now is Raytheon which we have chosen in another competition to be the second source will come on in a competitive way in the fourth production option.

Our exposure, maximum exposure, is on the first three production options which, although not insignificant in cost, we are not buying that many missiles, there is an end in sight on the fourth production option.

In the near term we are concerned about it. That is the reason it has taken us as long as it has to make a decision.

Senator KENNEDY. I hope when we get the test results, you make them available to the committee.

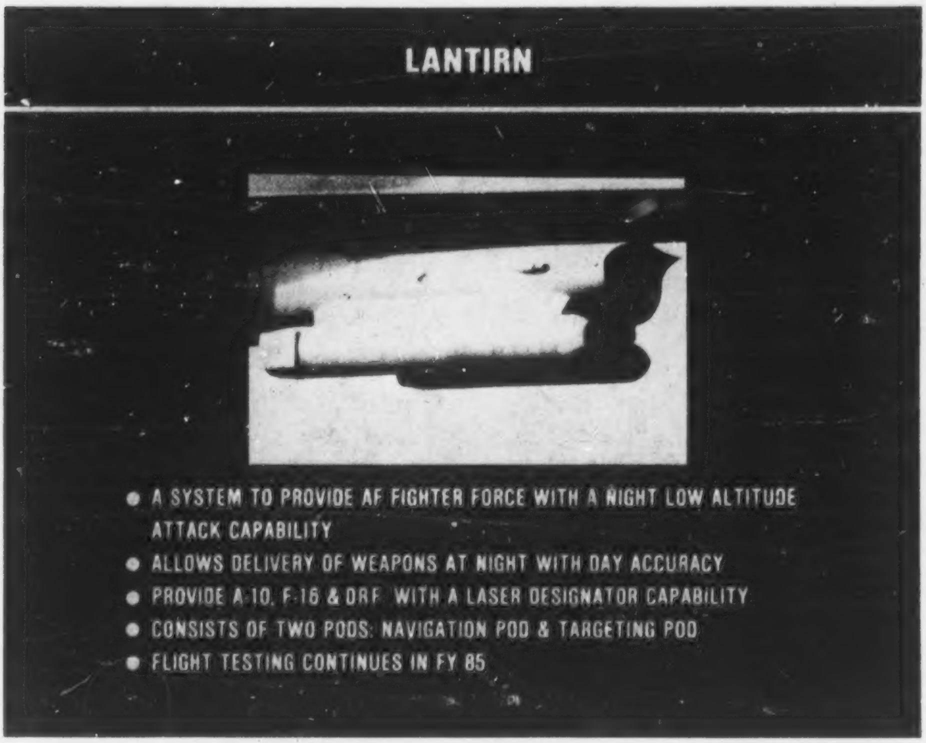
Senator GOLDWATER. We have some others in the same category too.

Dr. COOPER. Yes, sir. We owe you an answer on Lantirn as well.

General MONAHAN. Although 174 missiles will be procured in that first buy, 104 of those are test missiles. They are instrumented test vehicles.

We will use those for test purposes. So, we have cut the production rate very low at that time. Forty of those are coassembled by the competitor.

Hughes is forced to do that. Those are features of that particular contract that we would like to maintain.



LANTIRN

- A SYSTEM TO PROVIDE AF FIGHTER FORCE WITH A NIGHT LOW ALTITUDE ATTACK CAPABILITY
- ALLOWS DELIVERY OF WEAPONS AT NIGHT WITH DAY ACCURACY
- PROVIDE A-10, F-16 & DRF WITH A LASER DESIGNATOR CAPABILITY
- CONSISTS OF TWO PODS: NAVIGATION POD & TARGETING POD
- FLIGHT TESTING CONTINUES IN FY 85

Another very interesting program, but extremely important to us is the Lantirn two-pod program. It opens for us a night window for the first time.

Here is a picture of the Lantirn pod flying on the F-16. We are testing that out at Edwards.

Today we hope to begin procurement of the Lantirn and the pod. I have a few comments about the situation regarding the test program at this time.

We have had the navigation pod at our test center since last fall. Testing is progressing very, very well. We are now flying 200 feet completely blacked out at night with the navigation pod.

The head-up display is also working quite well. We are having difficulty with the TIRN pod. We have to take it back to the factory. We hope to get it out in March to complete the flight test.

Senator GOLDWATER. Last year you remember we had an argument about this in the conference. We came out with the agreement that the Air Force would evaluate the performance of the first development model with Congress before passage of the fiscal year 1985 authorization bill.

General MONAHAN. Yes.

Senator GOLDWATER. I know you have been evaluating the NAV pod, but the TIRN pod is experiencing some difficulties and evaluation will not begin until later this month.

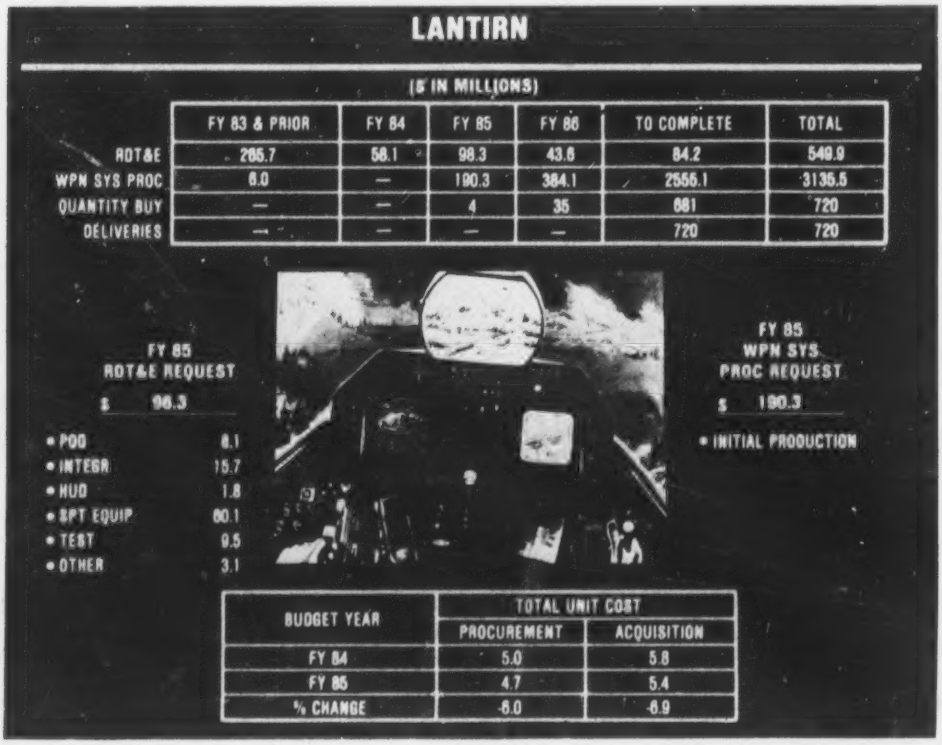
When do you think we are going to get some figures that we can work on?

General MONAHAN. We initiate testing about 10 days from now. It is going to take us a good month before we have anything that I think we can report to you on.

Senator GOLDWATER. I consider this to be one of the most important programs we have. I also consider it to be one of the most expensive programs we have.

I don't blame the Air Force. I think it is the manufacturer. I think he has had trouble. We have been taken.

I hope you fellows come down here with pretty good prices. It is going to be a hard, hard one to defend.



LANTIRN

($ IN MILLIONS)

	FY 83 & PRIOR	FY 84	FY 85	FY 86	TO COMPLETE	TOTAL
RDT&E	265.7	58.1	98.3	43.6	84.2	549.9
WPN SYS PROC	6.0	—	190.3	384.1	2555.1	3135.5
QUANTITY BUY	—	—	4	35	681	720
DELIVERIES	—	—	—	—	720	720

FY 85
RDT&E REQUEST
$ 98.3

• POD	8.1
• INTEGR	15.7
• HUD	1.8
• SPT EQUIP	60.1
• TEST	9.5
• OTHER	3.1

FY 85
WPN SYS
PROC REQUEST
$ 190.3

• INITIAL PRODUCTION

BUDGET YEAR	TOTAL UNIT COST	
	PROCUREMENT	ACQUISITION
FY 84	5.0	5.8
FY 85	4.7	5.4
% CHANGE	-6.0	-6.9

Dr. COOPER. last year with your agreement we were to try our best to obtain a fixed-price contract on all 720 pods.

We have a fixed-price contract on the development portion of the program. That is reasonably well in hand. Our liability is capped there.

The big dollars, however, are in production. We are in the process right now out at Systems Command of trying to negotiate a fixed-price contract for all 720.

That is a highly unusual circumstance for a contractor to sign up to that right out of the blocks. I think he sees the handwriting on the wall as well.

LANTIRN STATUS

Navigation pod—progressing well.
Targeting pod—flight test Mar 84.
Head-up display—successful performance.
Development/production costs—capped.
FY 85 funding—important for maintaining cost cap.

We do have to cap the cost of the program. It has been expensive. As far as we can see right now, it has not grown in cost since last year.

We do have good test results on the navigation pod, the LAN pod. We have some interesting tapes we can show you if you have time at some point.

We are excited about the results there. Unfortunately, and I think primarily just because of some faulty workmanship in the TIRN pod, we have not been able to gather good test data on that yet.

I think we will be lucky if we have anything of significance in a month. But that is where we are at this point.

Senator GOLDWATER. The last figure that I remember was $6 million.

Dr. COOPER. It is not quite that, Senator. If you take the total program cost and divide it by the number of pods, that is what you get.

Of course, there is an awful lot of support equipment and things that go into supporting it. The pods themselves are not that expensive, but if you look at what it is costing the Government to buy 720 pods and you come up with a unit price per pod, that is roughly what you get.

Senator GOLDWATER. That is the only way I know of. $6 million per copy is a lot of money.

Dr. COOPER. It is.

General RUSS. I have the figures on that because I was going over them the other day with some of the troops.

For unit flyaway in then year dollars, $3.5 million.

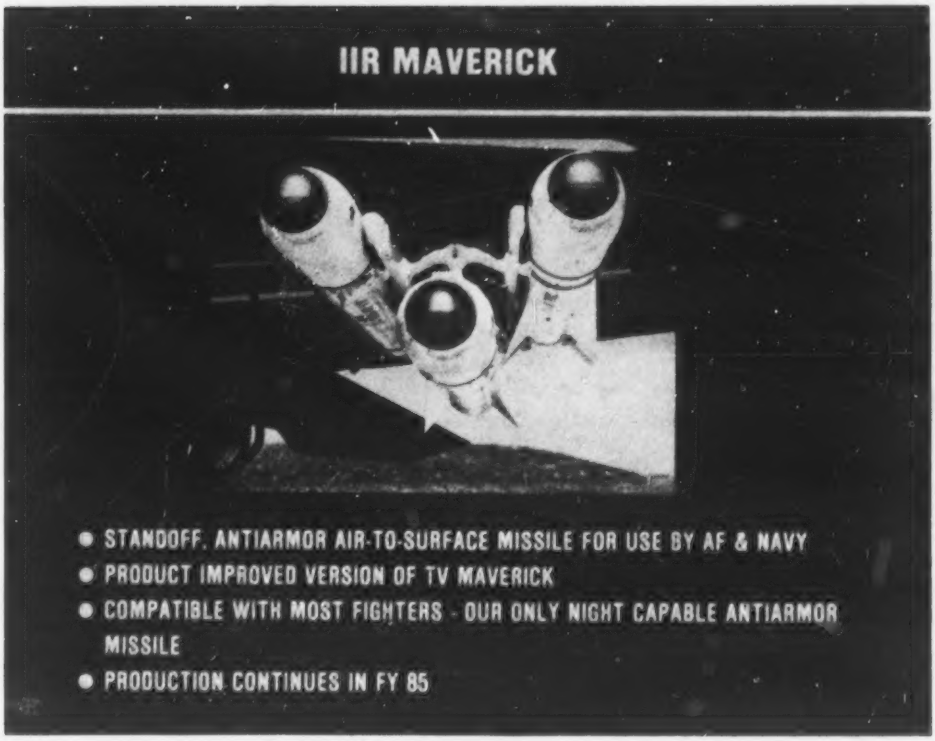
Total program cost in then year dollars is $5.4 million.

Senator GOLDWATER. That is everything?

General RUSS. Everything. It was $6.1 million, down to $5.4 million.

Senator GOLDWATER. I will have my staff call you sometime and we can get into this in more detail.

Dr. COOPER. We would like to show you the tapes and data we have collected to date. As I say, on the LAN part of it, navigation pod, it looks very good.



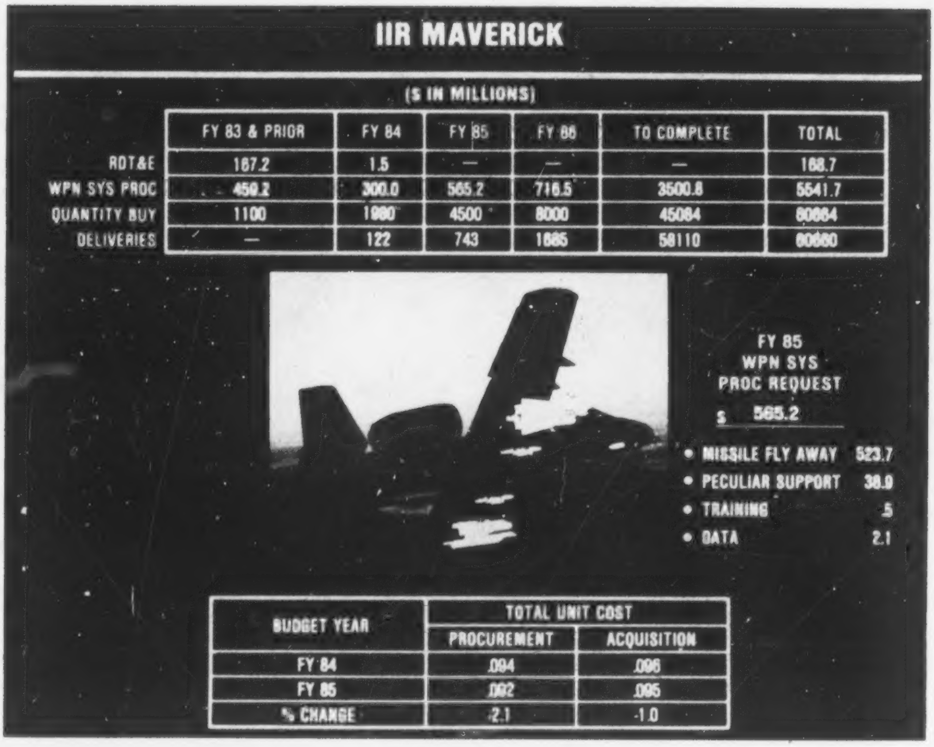
IIR MAVERICK

- STANDOFF, ANTIARMOR AIR-TO-SURFACE MISSILE FOR USE BY AF & NAVY
- PRODUCT IMPROVED VERSION OF TV MAVERICK
- COMPATIBLE WITH MOST FIGHTERS - OUR ONLY NIGHT CAPABLE ANTIARMOR MISSILE
- PRODUCTION CONTINUES IN FY 85

MAVERICK

General MONAHAN. One final program I would like to mention is the Maverick.

Development has progressed extremely well. We want to continue production into 1985.



IIR MAVERICK

($ IN MILLIONS)

	FY 83 & PRIOR	FY 84	FY 85	FY 86	TO COMPLETE	TOTAL
RDT&E	167.2	1.5	—	—	—	168.7
WPN SYS PROC	459.2	300.0	565.2	716.5	3500.8	5541.7
QUANTITY BUY	1100	1980	4500	8000	45084	60664
DELIVERIES	—	122	743	1685	58110	60660

FY 85
WPN SYS
PROC REQUEST
$ 565.2

• MISSILE FLY AWAY	523.7
• PECULIAR SUPPORT	38.9
• TRAINING	.5
• DATA	2.1

BUDGET YEAR	TOTAL UNIT COST	
	PROCUREMENT	ACQUISITION
FY 84	.094	.096
FY 85	.092	.095
% CHANGE	-2.1	-1.0

Next year we intend to just about double production that we have at this time with Hughes. Of the 4,500 missiles, the next year's production, 500 of them are with a competitor which again has to be Raytheon.

We are initiating a source here with a competitor; the best way we know to maintain competition such that in fiscal year 1986 and beyond we are able to compete on an annual basis between Hughes and Raytheon on Maverick.

Dr. COOPER. I want to express our appreciation to you once again for your letters in behalf of the Maverick program on "60 Minutes." You wrote and I read them again last night. Coming from you, that is a big support.

When we do it, we don't seem to get much of a sympathetic ear. It is not a perfect weapon. We have not invented a perfect weapon yet.

I think it goes an awful long way toward correcting some very significant deficiencies we have.

Senator GOLDWATER. I could spend half my time writing those letters. The trouble is that they don't publish them any more.

Dr. COOPER. I can assure you we read them, sir.

Senator GOLDWATER. That is very interesting.

General MONAHAN. That completes the program that I wanted to talk about.

General Gorton, Director of Operational Requirements——

Senator GOLDWATER. I have quite a number of questions. I am also faced with a very bad problem this afternoon. I will submit these questions to you in written form and you provide answers for the record.

General MONAHAN. Sure.

Senator GOLDWATER. The prepared statement by Gen. Alfred Hansen, Director, Logistics Plans and Programs, USAF, will be placed in the record as though read.

[The prepared statement by Gen. Alfred G. Hansen, follows:]

PREPARED STATEMENT OF MAJ. GEN. ALFRED G. HANSEN, DIRECTOR, LOGISTICS PLANS AND PROGRAMS, DEPUTY CHIEF OF STAFF/LOGISTICS AND ENGINEERING HEADQUARTERS, U.S. AIR FORCE

Mr. Chairman and Members of the Committee: I am pleased to present portions of the fiscal year 1985 Other Procurement, Air Force (OPAF) $9.562 billion budget request. Today I will address Vehicular Equipment and the tactical portion of the Electronics and Telecommunications Equipment budget activity. The two programs total $1.1 billion and represent 11 percent of the budget request which also includes other segments of Electronics and Telecommunicatons, Munitions and Associated Equipment, Base Maintenance and Support Equipment, and classified projects. The classified projects are included in the Base Maintenance and Support Equipment budget activity and represent almost 50 percent of the fiscal year 1985 OPAF request. Of the remaining $3.8 billion, $1.4 billion is for Munitions and Associated Equipment, $412 million for Base Maintenance and Support Equipment and $2.1 billion for the other portions of Electronics and Telecommunications Equipment.

I will discuss Vehicular Equipment first followed by Electronics and Telecommunications Equipment.

VEHICULAR EQUIPMENT

The fiscal year 1985 budget requests $441.6 million for the Vehicular Equipment Program, still leaving a deficit of $920.9 million. Motor vehicles provide transportation necessary to support Air Force weapon systems and a winning warfighting capability. They serve to integrate activities and have a synergistic affect on total mission accomplishment. Vehicular equipment supports flightline operations, base transportation and distribution networks, base maintenance and construction, material handling, and general cargo and personnel movement. The condition of the vehicle fleet deteriorated in recent years as it has been necessary to allocate available resources elsewhere. Today, the Air Force has only 107,305 vehicles on hand against a requirement for 130,600. Additionally, 34,800 of the vehicles on hand need to be replaced based on degree of deterioration, age, and obsolescense. In recognition of the unreliable condition of the fleet and the need to return it to a viable support element, the Air Force committed $442 million of its fiscal year 1985 total obligational authority (TOA). Although this represents a sizeable growth over fiscal year 1984, Air Force leadership deemed it necessary in overall ranking of priorities within available TOA. The 1985 program was developed based upon direct input from Air Force Major Commands. It procures those vehicles most critically required in sustaining operations. Included within the $442 million is $62.9 million for support of the Air National Guard and the Air Force Reserves, providing a full spectrum of vehicles including ambulances, aircraft refuelers and tow tractors, tactical cargo vehicles, crash/fire trucks, aircraft loaders and materials handling equipment, and roads and grounds maintenance equipment.

Air Force motor vehicles are centrally managed by the Air Force Logistics Command Air Logistics Center at Robins Air Force Base, Georgia. The Vehicle System Management Office at Robins Air Force Base, activated in 1982, has implemented progressive vehicle management concepts and procurement strategies, such as multiyear contracting and grouping of like type vehicles into single procurement actions on a competitive basis. Results are fleet standardization, lower support and operational costs and improved documentation and reporting procedures. The procurement activity at Warner-Robins Air Logistics Center buys vehicles which are unique to the Air Force mission such as aircraft loaders, refuelers, and crash fire trucks. The General Services Administration procures Air Force commercial vehicles rated 10,000 pounds gross vehicle weight (GVW) and below. The Defense Logistics Agency Defense Construction Supply Center at Columbus, Ohio buys various common construction and materials handling equipment. The Army Tank Automotive Command (TACOM) in Detroit, Michigan procures military design vehicles and larger commercial vehicles rated above 10,000 pounds GVW.

The Air Force vehicle fleet is divided into six major categories for budgeting purposes. The following table lists these categories together with funding in the fiscal years indicated:

VEHICULAR EQUIPMENT

[In millions of dollars]

	Fiscal year—		
	1984	1985	1986
Category:			
Special purpose	55.1	95.9	155.5
Fire fighting	15.1	33.2	38.5
Material handling	19.5	44.8	53.4
Cargo utility	150.4	165.7	129.4
Passenger carrying	21.5	33.2	35.2
Base maintenance	52.5	68.8	76.3
Total	314.1	441.6	[1] 488.4

[1] Total does not add due to rounding.

SPECIAL PURPOSE VEHICLES

The $95.9 million requested for procurement of special purpose vehicles includes such vehicles as aircraft and equipment tow tractors, aircraft refuelers, and bulldozers. The bobtail flightline tow tractor is the single largest procurement in this category, requiring $12.5 million for the final year of a three year multiyear contract. Other significant procurements in this category include telephone maintenance trucks for $16.5 million, the R-9 aircraft refueler at $6.3 million and the tractor dozer for $7.1 million. Special purpose vehicles are critical to worldwide Air Force mission accomplishment.

FIRE FIGHTING EQUIPMENT

This category contains $33.2 million for acquisition of emergency fire fighting and crash rescue equipment. Funds totaling $23.3 million are required to procure the Air Force portion of the fourth year of the five year multiservice, multiyear contract for P-19 crash fire trucks. The P-19 is the largest single item in the fiscal year 1985 Vehicular Equipment Program. Other flightline and structural fire trucks such as the P-15, P-8, P-10, and P-20, vital to the readiness of Air Force fire protection systems, are included in this category and are planned for procurement in fiscal year 1985.

MATERIAL HANDLING EQUIPMENT

Material handling vehicles are essential to cargo handling and marshalling operations, munitions handling and warehousing functions. Funds in this category are requested to procure several type forklifts ranging in capacity from 4,000 pounds to 15,000 pounds. Funds totaling $7.5 million are requested for the 25K Aircraft Loader which is the backbone of the Air Force tactical airlift 463L palletized cargo handlong capability. The fiscal year 1985 request also seeks approval of $4.5 million for procurement of new container lift trucks for terminal movement of containerized cargo. This initiative is an Air Force new start in fiscal year 1985, and is being fielded to support increased quantities of containerized shipments in the Defense Transportation System.

CARGO-UTILITY VEHICLES

Funds totaling $165.7 million are requested in the Cargo-Utility category which constitute the largest dollar volume in the fiscal year 1985 Vehicular Equipment budget request. Vehicles in this category are of both commercial and military design and consist of pickup trucks, heavy cargo trucks, truck tractors, trailers, and dump trucks, among others. Funding in the amount of $18.2 million is required to procure 725 High Mobility Multipurpose Wheeled Vehicles (HMMWV) and $18.3 million for 1,350 Commercial Utility Cargo Vehicles (CUCV) included in Army TACOM multiyear contracts. These vehicles play critical roles in Air Force tactical communications and Air Base Ground Defense missions. Other military design vehicles such as the two and one-half ton M-35 cargo truck costing $17.7 million and the five ton M-923/925 cargo truck costing $21.6 million are included in this category. All military design vehicles are procured by the Army. The vehicles detailed above, as well as the remainder of vehicles in this category, are key to Air Force transportation and distribution networks and enhance Air Force warfighting capability.

PASSENGER CARRYING VEHICLES

The fiscal year 1985 budget request contains $33.2 million for procurement of 1,628 passenger carrying vehicles composed of ambulances for emergency medical transportation, buses of various sizes and sedans and station wagons. Funds totaling $9.5 million are required to exercise options on the final year of a three year multiyear contract for the modular ambulance. The buses in the program will provide for group transportation at air bases and the Air Force Academy, and for the transportation of aircrews and school children. Sedans and station wagons constitute less than two percent of the fiscal year 1985 request and are used for taxi service and daily general passenger transportation roles.

BASE MAINTENANCE SUPPORT EQUIPMENT

The base maintenance support equipment category contains $68.8 million for procurement of heavy equipment such as front-end loaders, excavators, rollers, cranes, and runway sweepers. These vehicles are operated by Air Force civil engineers in providing maintenance of roads, pavements, and grounds. These type vehicles are the nucleus of the rapid runway repair (RRR) capability. Air Force watercraft, essential for water survival training and firing range guidance and drone recovery operations, are also included in this catgegory, as if funding to support spares and repair parts and for modifications to the Air Force vehicle fleet. Funds amounting to $9.6 million are requested in fiscal year 1985 to procure 14 replacements for present watercraft which are aged, unreliable, and unsafe.

This concludes the Vehicular Equipment discussion. The next area addressed will be Electronics and Telecommunications Equipment.

ELECTRONICS AND TELECOMMUNICATIONS EQUIPMENT

The tactical communications portion of the Air Force Other Procurement Electronics and Telecommunications fiscal year 1985 budget request is for $652 million, approximately 24 percent of our Electronics and Telecommunications Program. These funds will provide modern, interoperable, jam resistant, and secure command, control and communications (C^3) equipment for theater and tactical forces. For discussion purposes, the program has been divided into Tactical Air Control, Tactical Command and Control, and Tactical Reconnaissance.

TACTICAL AIR CONTROL

In fiscal year 1985 the Air Force requests $135 million to buy communications equipment that performs the tactical air control mission. A discussion of these programs follows:

JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM (JTIDS)

Fiscal year 1985 provides fourth year production funds for the JTIDS Adaptable Surface Interface Terminals (ASITs) which provide a time division multiple access, jam resistant, secure, digital distribution system between the E-3A Aircraft Warning and Control System (AWACS) aircraft and the ground Tactical Air Control System.

TACTICAL AIRLIFT EQUIPMENT

Fiscal year 1985 funds will continue the procurement of communications equipment to be used by combat control airlift teams when deployed to austere, forward airfields. Funds are also requested to continue procurement of consolidated aerial port automatic data processing equipment and a secure capability to transmit and receive force control information.

GROUND LAUNCHED CRUISE MISSILE (GLCM) COMMUNICATIONS

GLCM communications equipment to be procured with fiscal year 1985 funds include tactical radios for convoy operations, dispersal site intrusion detection equipment, and base communications systems, for example, radio, technical control, teletype, base cable plant equipment.

ULTRA LOW SIDELOBE ANTENNA (ULSA)

Fiscal year 1985 funding will provide third year production funding for ULSA's which will be mounted on existing AN/TPS-43E tactical radars. The ULSA reduces radar vulnerability to jamming and, more importantly, to attack by anti-radiation missiles (ARMs). The radar signature is reduced to the point where ARMs must be launched significantly closer to the target to obtain enough radiated energy to lock-on to the AN/TPS-43E radar.

TACTICAL COMMAND AND CONTROL

The information and data obtained by operational tactical systems must be made available to theater commanders and mission planners in real-time. The Tactical Air Forces must possess a versatile command and control system that can be deployed worldwide and that can operate in tactical, bare base environments. The Air Force fiscal year 1985 tactical command and control communications request is for $277 million. A discussion of significant procurement programs follows:

JOINT TACTICAL COMMUNICATIONS PROGRAM (TRI-TAC)

TRI-TAC is a joint service effort to develop and acquire tactical communications equipment that can be commonly used by all services in combat. The TRI-TAC program will replace existing logistically hard-to-support systems with modern, interoperable, digital equipment that wil allow total system security and increased capacity for both data and voice communications needs. The Air Force fiscal year 1985 request will provide third year production funds for the AN/TSQ-111 Communications Nodal Control Element (CNCE) buy. In addition, fiscal year 1985 begins procurement of the unit level circuit switch programs (AN/TTC-42 and SB-3865).

SATELLITE TERMINALS

Long-haul tactical communication is essential to the worldwide command and control of the tactical Air Force. Modern ground satellite systems are used to access the worldwide satellite communications network. Fiscal year 1985 funding continues procurement of Ground Mobile Force (satellite) Terminals (GMFT) for our tactical forces as well as NATO Air Base Satellite Communications (NABS) which provides critical communications for U.S. forces at dispersed NATO collocated operated bases.

TACTICAL C-E EQUIPMENT

Forward air controllers assigned to Army units require mobile communications systems that are rugged, securable, and interoperable with Army and Air Force communications systems. PACER SPEAK is a replacement program of existing tactical air control teams communications equipment that is obsolete, non-securable, and not able to keep up with Army mechanized combat units. PACER SPEAK will provide modular, solid state, anti-jam radio communications that can be mounted and operated from jeeps, armored personnel carriers, or if necessary, on the backs of forward air controllers. Funds are also requested to procure handheld digital communications terminals that will enable mission data to be sent via hard-to-jam rapid burst transmissions. In addition, fiscal year 1985 funds are included to begin a replacement program for the TSC-60, the principal tactical HF radio system, which is now obsolete and logistically unsupportable.

USREDCOM/USCENTCOM

The United States Readiness Command (USREDCOM) is tasked to respond to crisis situations on a worldwide basis. The United States Central Command (US CENTCOM) is specifically responsible for crisis situation response in Southwest Asia. Both commands require transportable communication equipment to support deployments and to provide connectivity to the Defense Communications System. Fiscal year 1985 funds provide continued support for these requirements.

TACTICAL RECONNAISSANCE

In fiscal year 1985, the Air Force requests $240 million to procure communications equipment that provides theater commanders a near real-time status of the battlefield situation. The programs involved are:

TACTICAL RECONNAISSANCE

Air Force reconnaissance aircraft and associated ground processing equipment provide commanders with the essential information necessary to plan and conduct military operations. The associated ground facilities and imagery processing, interpretation and dissemination facilities are procured with Other Procurement Appropriation funds. These items are capable of interfacing with infrared, photographic, and radar sensor reconnaissance systems. Fiscal year 1985 funds will provide tactical signal intelligence support equipment which will provide improvements and product upgrades to a variety of collection systems. Additionally, fiscal year 1985 funds provide for the TR-1 ground stations and the associated radar imagery processing equipment necessary to process and utilize data collected by the TR-1 aircraft.

PRECISION LOCATION STRIKE SYSTEM (PLSS)

The Precision Location Strike System (PLSS) is an integrated detection, location and strike system designed primarily to suppress energy air defense and thus enhance the survivability of tactical aircraft. TR-1 aircraft will carry the airbrone PLSS location and data relay equipment. The concept calls for the information to be downlinked to a ground central processing site where the data can be processed to provide a near real time theater wide electronic order of battle. Selected hostile air defenses can then be targeted for attack. Fiscal year 1985 procurement funds provide for the PLSS central processing subsystem and required ground site navigation subsystems.

Mr. Chairman, this concludes my prepared statement.

Senator GOLDWATER. We will now hear from General Gorton.

STATEMENT OF MAJ. GEN. WILLIAM A. GORTON, DIRECTOR, OPERATIONAL REQUIREMENTS, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT AND ACQUISITION

U.S. AIR FORCE

General GORTON. It is a pleasure to have the opportunity to talk to you.

I have 37 programs to go through. Mr. Smith suggested I might want to skinny that down or I would end up talking like that chap for Federal Express. We will hit a few of them and the rest we will submit for the record, sir.

(See charts, p. 1735.)

Senator GOLDWATER. General Monahan, I appreciated that presentation very much. It was very well done.

General MONAHAN. Thank you.

Senator GOLDWATER. You may proceed, General Gorton.

General GORTON. First, as General Russ pointed out, regardless of some of the things that have been published recently in the press, we believe we have a coherent process as well as a good procurement strategy for the development of our munitions.

THE MUNITIONS ACQUISITION PLAN

Major review of Air Force weapons.

Objective: A time-phased weapons development and procurement plan.

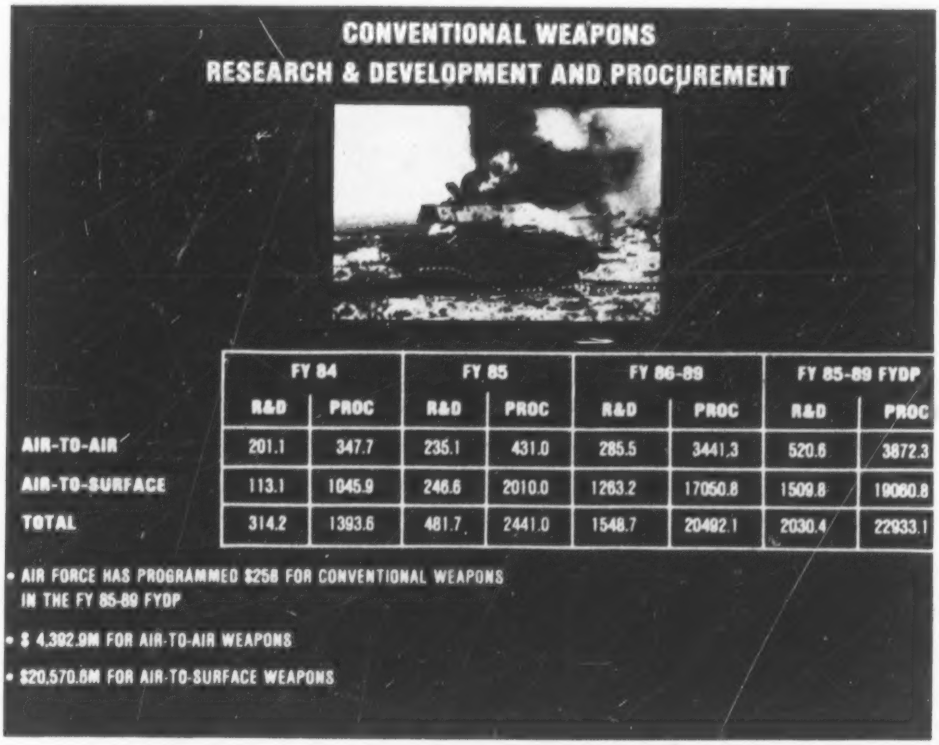
Result: The munitions acquisition plan—represents our best military judgement; considers near-term warfighting capability as well as future requirements; provides an affordable balance; and direct attack, terminal standoff, long range standoff.

I want to take just a moment to show you one slide on the process itself. It is called the "Munitions Acquisition Plan."

It is something we initiated about 2 years ago. It goes through the process of being reviewed by each combat Commander and the Air Staff. It is an Air Force munitions plan that represents our best judgment as to the balance of the munitions we should be developing and those that we should be procuring.

While the plan is not fiscally constrained, we do take fiscal considerations into the development of the plan. It represents the baseline by which we build our budget submission.

It does allow for affordable balance in direct attack such as bombs, overflight weapons, terminal stand-off, and long-range stand-off.



CONVENTIONAL WEAPONS
RESEARCH & DEVELOPMENT AND PROCUREMENT

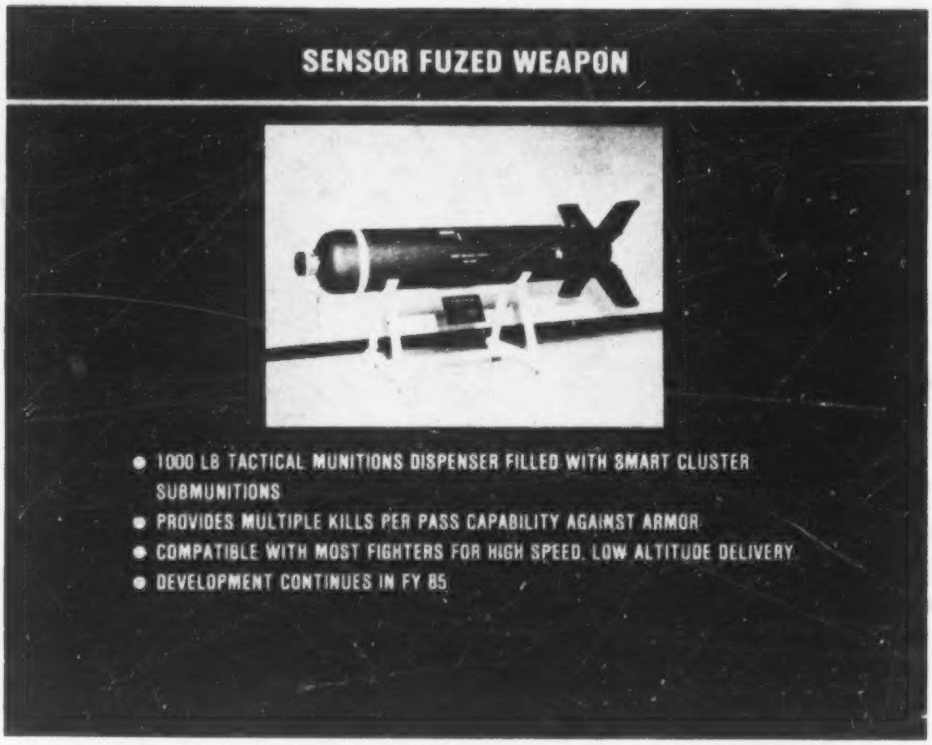
	FY 84		FY 85		FY 86-89		FY 85-89 FYDP	
	R&D	PROC	R&D	PROC	R&D	PROC	R&D	PROC
AIR-TO-AIR	201.1	347.7	235.1	431.0	285.5	3441.3	520.6	3872.3
AIR-TO-SURFACE	113.1	1045.9	246.6	2010.0	1263.2	17050.8	1509.8	19060.8
TOTAL	314.2	1393.6	481.7	2441.0	1548.7	20492.1	2030.4	22933.1

- AIR FORCE HAS PROGRAMMED $25B FOR CONVENTIONAL WEAPONS IN THE FY 85-89 FYDP
- $ 4,392.9M FOR AIR-TO-AIR WEAPONS
- $20,570.6M FOR AIR-TO-SURFACE WEAPONS

This is one figure, one way of looking at it through the FYDP. General Russ showed you one particular segment on air-to-ground.

To give you an idea of procurement in 1984 for the total munitions plan, we are asking for $1.3 or $1.4 billion in fiscal year 1985, a substantial increase to about 2.4, an additional 1.1 increase over this year in procurement alone.

The reason for that is that the prior 4 or 5 years we spent a lot of money in developing and looking at the potential for new types of weapons. We are not terminating that process. We are still putting a lot of R&D in on future weapons, but we begin to transition from development into procurement during this period.



SENSOR FUZED WEAPON

- 1000 LB TACTICAL MUNITIONS DISPENSER FILLED WITH SMART CLUSTER SUBMUNITIONS
- PROVIDES MULTIPLE KILLS PER PASS CAPABILITY AGAINST ARMOR
- COMPATIBLE WITH MOST FIGHTERS FOR HIGH SPEED, LOW ALTITUDE DELIVERY
- DEVELOPMENT CONTINUES IN FY 85

Take a look at one of the weapons we are starting development on this year. It is called the sensor-fused weapon. You may remember this out of the old WAAM program.

Four basic elements: CYCLOPS, ACM, BKEP, and the sensor weapon.

We canceled that last year. It was pretty good, but not quite as good as some of the others.

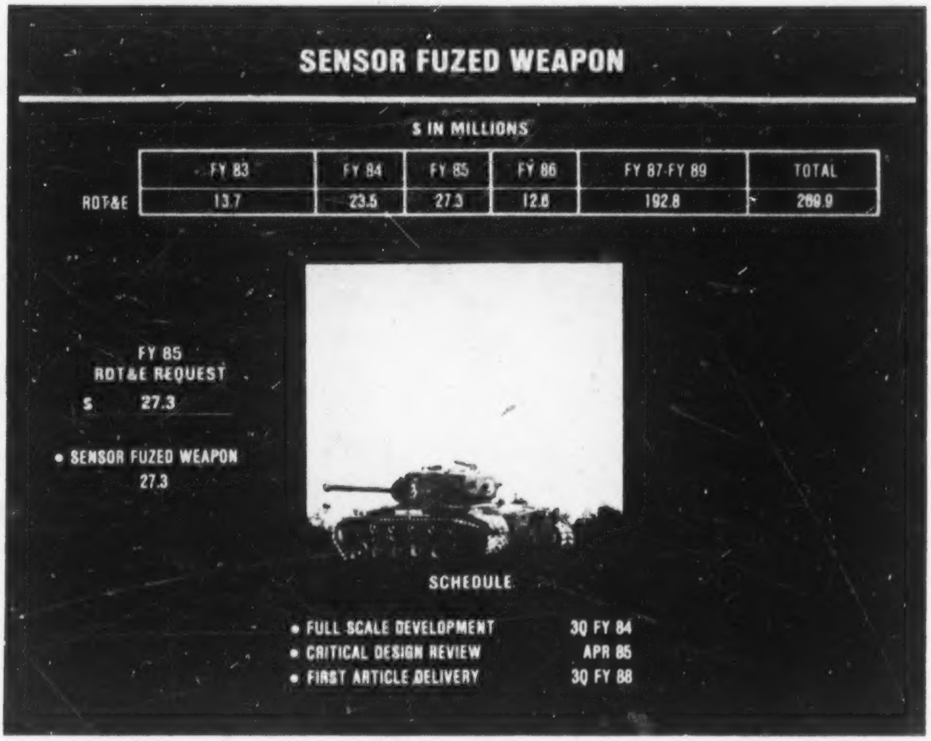
ERAM which was a mine, we will talk a little more about that.

This is a thousand-pound direct overflight weapon. However, it includes a rather sophisticated munition called Skeet which is a smart, antiarmored IR seeking weapon that actually is dispensed out of one of these munitions which carries 40 of these weapons itself. It heat-seeks the armor or heat source.

Senator GOLDWATER. Is this related to your multiple weapon system you drop on runways?

General GORTON. No, sir. It is not, although the dispenser that you saw, which is a tactical munitions dispenser, would be one of the things we put BKEP in, which is the concrete penetrator.

This same tactical munitions dispenser would retain those. Skeet is a particular weapon to defeat armor. It comes out, articulates, searches, finds the heat source and fires a slug into, in this particular case, that is an actual shot from a tower into the heat source itself.



SENSOR FUZED WEAPON

$ IN MILLIONS

	FY 83	FY 84	FY 85	FY 86	FY 87-FY 89	TOTAL
RDT&E	13.7	23.5	27.3	12.6	192.8	269.9

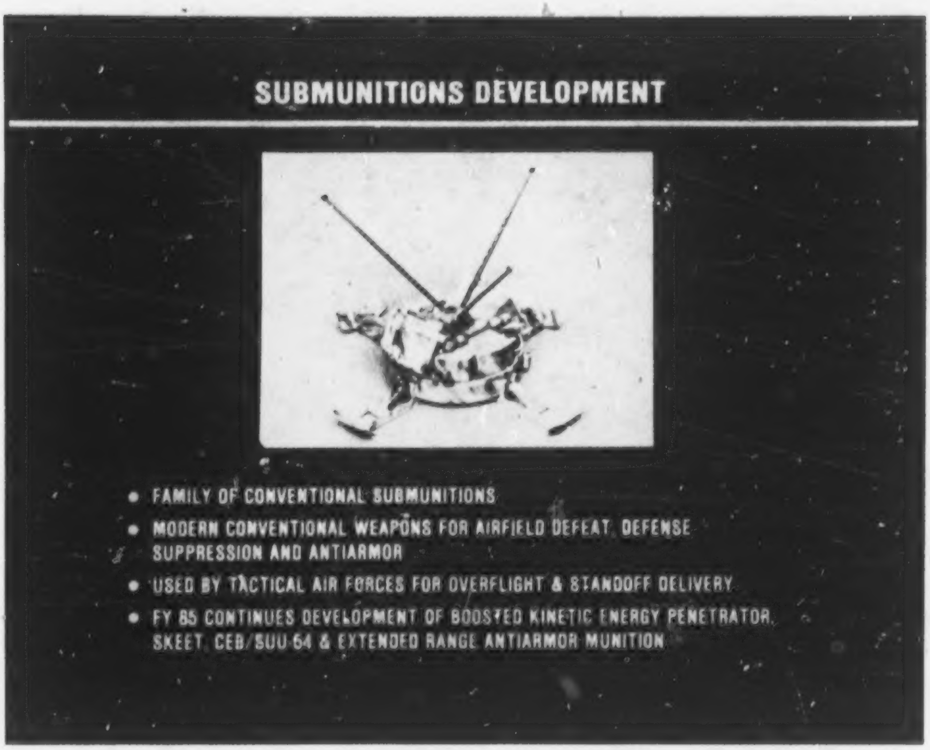
FY 85
RDT&E REQUEST
$ 27.3

- SENSOR FUZED WEAPON
27.3

SCHEDULE

- FULL SCALE DEVELOPMENT 3Q FY 84
- CRITICAL DESIGN REVIEW APR 85
- FIRST ARTICLE DELIVERY 3Q FY 88

Basically we are starting a full-scale development this year on this weapon. This is R&D, the money involved in that program.



SUBMUNITIONS DEVELOPMENT

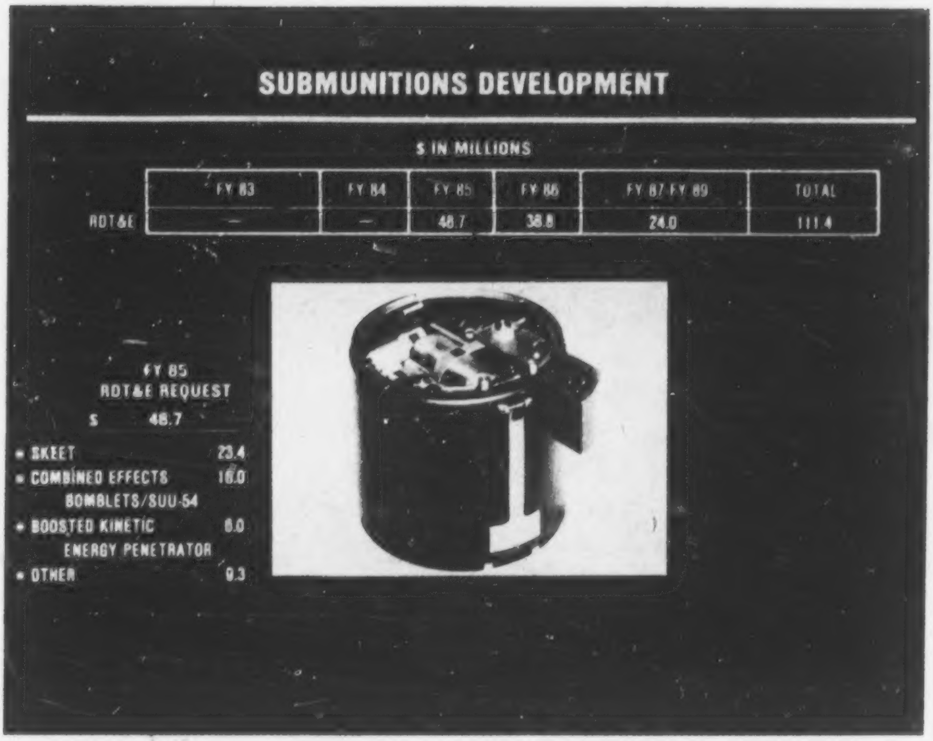
- FAMILY OF CONVENTIONAL SUBMUNITIONS
- MODERN CONVENTIONAL WEAPONS FOR AIRFIELD DEFEAT, DEFENSE SUPPRESSION AND ANTIARMOR
- USED BY TACTICAL AIR FORCES FOR OVERFLIGHT & STANDOFF DELIVERY
- FY 85 CONTINUES DEVELOPMENT OF BOOSTED KINETIC ENERGY PENETRATOR, SKEET, CEB/SUU-64 & EXTENDED RANGE ANTIARMOR MUNITION

This is some more submunition development that came out of WAAM.

This is an ERAM mine and Skeet submunition in a tactical dispenser. The ERAM mine is a smart mine. It senses tanks acoustically and vectors over to them and lands in this position here and fires a Skeet.

We have a plan for that submunition development that is ongoing now.

Dr. COOPER. It looks like R2 D2.



SUBMUNITIONS DEVELOPMENT

$ IN MILLIONS

	FY 83	FY 84	FY 85	FY 86	FY 87-FY 89	TOTAL
RDT&E	—	—	48.7	38.8	24.0	111.4

FY 85
RDT&E REQUEST
$ 48.7

• SKEET	23.4
• COMBINED EFFECTS BOMBLETS/SUU-54	16.0
• BOOSTED KINETIC ENERGY PENETRATOR	6.0
• OTHER	9.3

General GORTON. Yes, sir. This is the money involved in that submunition development.

BKEP is also in here. That is for submunition, concrete buster.

Senator GOLDWATER. Some of them were tested down at Eglin.

General GORTON. We were doing tests on BKEP and STABO which was the German counterpart. We did rather open and extensive tests on the two munitions.

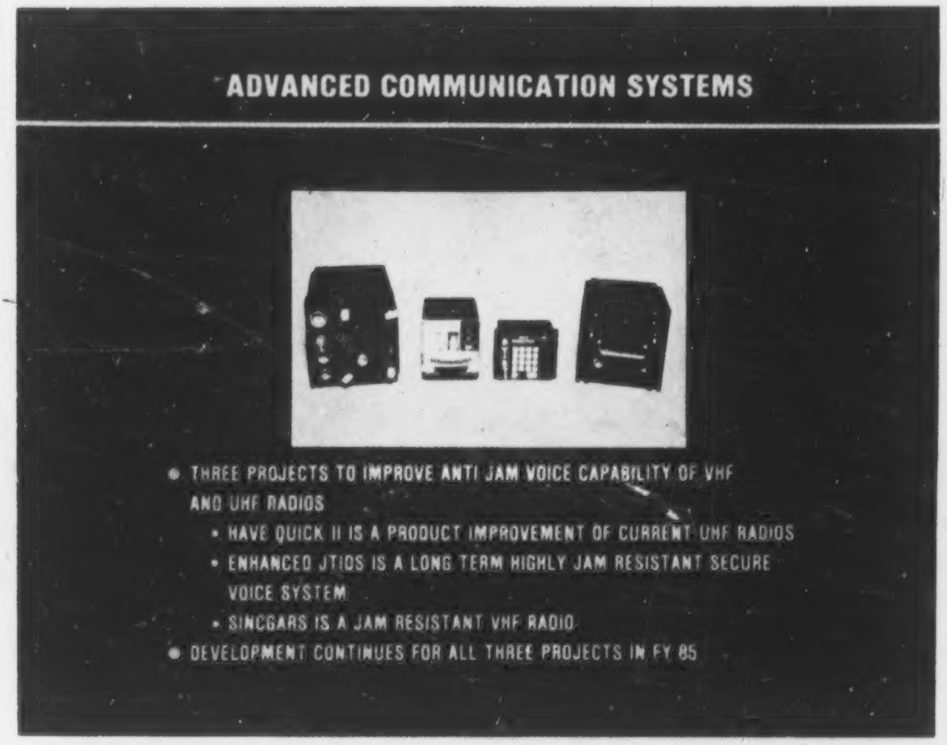
We found that was more safe, more cost effective. In fact, the Germans are coming back to Eglin next month to do some more testing. They acknowledge it was a fair and open test.

Senator GOLDWATER. The weapon tested is not to destroy the runway, but destroy gasoline tanks, et cetera, I take it, backdropped by a fighter wing.

General GORTON. CEB—that is one here, right here. Combined effect bomblets.

Senator GOLDWATER. It is a very effective weapon.

General GORTON. It is indeed. It will take care of tanks. You may have seen some of the films on that.



ADVANCED COMMUNICATION SYSTEMS

- THREE PROJECTS TO IMPROVE ANTI JAM VOICE CAPABILITY OF VHF AND UHF RADIOS
  - HAVE QUICK II IS A PRODUCT IMPROVEMENT OF CURRENT UHF RADIOS
  - ENHANCED JTIDS IS A LONG TERM HIGHLY JAM RESISTANT SECURE VOICE SYSTEM
  - SINCGARS IS A JAM RESISTANT VHF RADIO
- DEVELOPMENT CONTINUES FOR ALL THREE PROJECTS IN FY 85

Let us go on now to advanced communications systems. We are dealing with three basic radios here, Mr. Chairman. We are looking at Have Quick II modification. That is a modification to the current Have Quick radios we have going into our aircraft today.

That has been an extremely successful program and for the first time gives you ability to defeat the first line Soviet Jammer with our UHF radio.

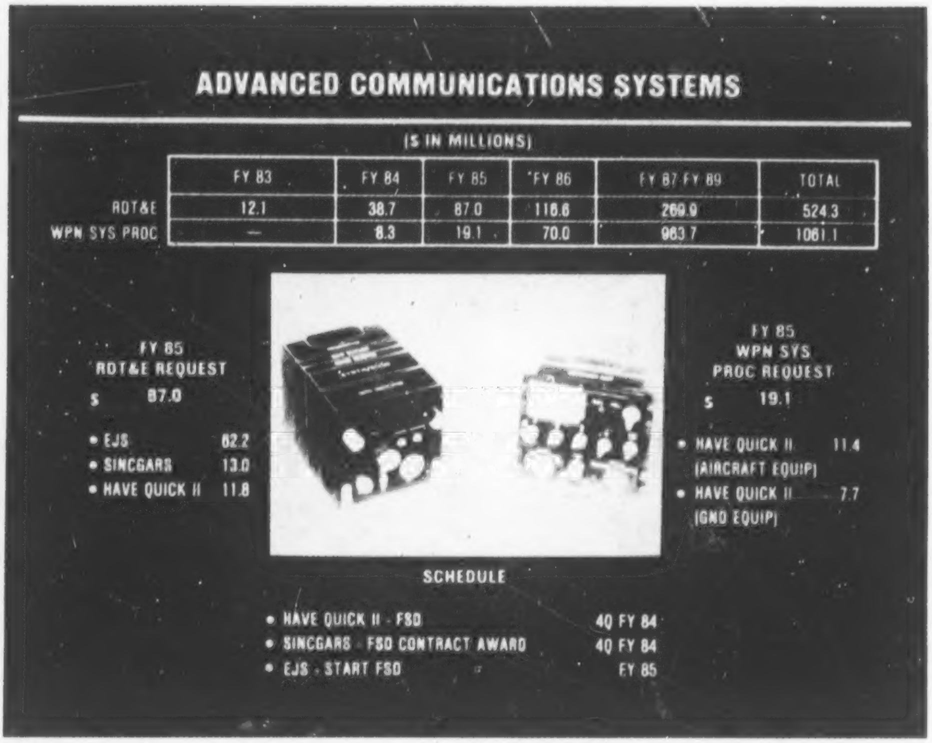
Voice communications, as you well know, is the prime means by which we operate our fighters today and will in the future. In looking at Have Quick capability against the current [deleted] Jammer, it was determined by the midnineties that Have Quick would be a simple thing to overcome if the Soviets wanted to pursue that.

We decided to make some minor changes to the Have Quick radio, called Have Quick II and that is in the advanced system, to be able to hop a bit faster on the frequency and increase the power.

We currently have 10-watt radios. Have Quick II would have power increased to [deleted].

Another radio is the SINCGARS radio which is an Army radio. We are buying into that as well. It provides us with antijam capability on VHF radios so that we communicate with our Army in a close air support role for aircraft such as F-16 and A-10 with FM radio.

The third and by far more significant in the long term is enhanced JTID (EJS). EJS, as you know, has had a history that emanates from the talks last year as we looked at what was required to overcome what we anticipate to be mass Soviet jammer threat.



ADVANCED COMMUNICATIONS SYSTEMS

($ IN MILLIONS)

	FY 83	FY 84	FY 85	FY 86	FY 87-FY 89	TOTAL
RDT&E	12.1	38.7	87.0	116.6	269.9	524.3
WPN SYS PROC	—	8.3	19.1	70.0	963.7	1061.1

FY 85
RDT&E REQUEST
$ 87.0

• EJS	62.2
• SINCGARS	13.0
• HAVE QUICK II	11.8

FY 85
WPN SYS
PROC REQUEST
$ 19.1

• HAVE QUICK II (AIRCRAFT EQUIP)	11.4
• HAVE QUICK II (GND EQUIP)	7.7

SCHEDULE

• HAVE QUICK II - FSD	4Q FY 84
• SINCGARS - FSD CONTRACT AWARD	4Q FY 84
• EJS - START FSD	FY 85

EHS has evolved into that program. We are asking for money in RDT&E on that particular system. Basically we are looking at systems smaller than a JTID's system.

It will be smaller and less costly. It is principally to provide us the increased DB margin over what we anticipate to be the new Jammer coming down the road in the nineties.

We are looking for a significant increase in our capability. We need that high DB jam margin in order to be able to overcome that threat at or near the teeth of the Jammer.

We are also looking at how this system can interface and operate with other services, particularly the Navy. We are currently actively involved with our wave form in the Navy and looking at how that wave form might be adapted to be able to talk and even pass data somewhere down the road.

I want to emphasize very clearly what we are talking about is high antijam voice communication with this system.

JTID's is our system to inter-operate on high volume data.

While the Navy is looking at it from both voice and data, it is our principal means of disseminating a large volume of data to our control men and a selected number of our air defense aircraft.

The main means of communicating and operating with both our allies and sister services will be voice.

Dr. COOPER. I might add so that the record is complete, we have had a problem with this program over the last couple of years. I think we are very close to a solution right now.

What it boils down to is that there are tense discussions going on as to which frequency band we are going to operate in, whether L band or another band, and which wave form we will use.

Quite frankly, it is just a compromise right now. If one frequency band is chosen, it will cost the Air Force a little more money to modify our EJS. The Navy won't have to add anything.

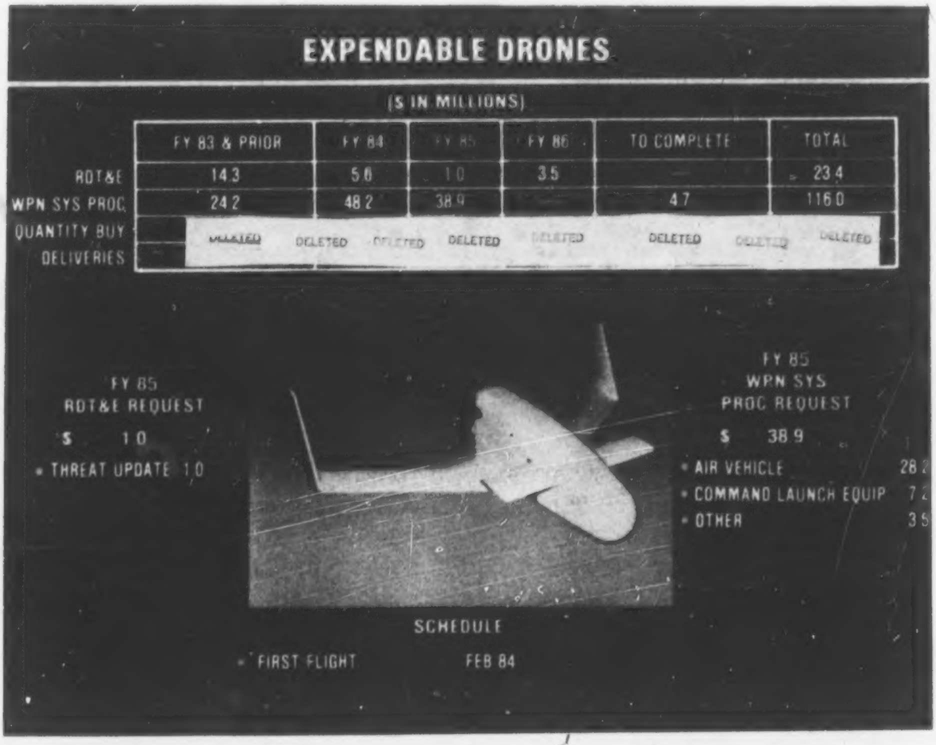
If we choose a different frequency band, then the Navy will have to spend a little more money.

We have been made another offer that we can't refuse. We need to get our act together and make a decision by the end of this month. I am confident we will.

Senator GOLDWATER. Is that the Lockheed?

Dr. COOPER. Hazletine.

General GORTON. This is the next subject. It is not Lockheed but Boeing.



EXPENDABLE DRONES

($ IN MILLIONS)

	FY 83 & PRIOR	FY 84	FY 85	FY 86	TO COMPLETE	TOTAL
RDT&E	14.3	5.6	1.0	3.5	—	23.4
WPN SYS PROC	24.2	48.2	38.9	—	4.7	116.0
QUANTITY BUY	DELETED	DELETED DELETED	DELETED	DELETED	DELETED DELETED	DELETED
DELIVERIES						

FY 85
RDT&E REQUEST
$ 1.0
- THREAT UPDATE 1.0

FY 85
WPN SYS
PROC REQUEST
$ 38.9
- AIR VEHICLE 28.2
- COMMAND LAUNCH EQUIP 7.2
- OTHER 3.5

SCHEDULE
- FIRST FLIGHT FEB 84

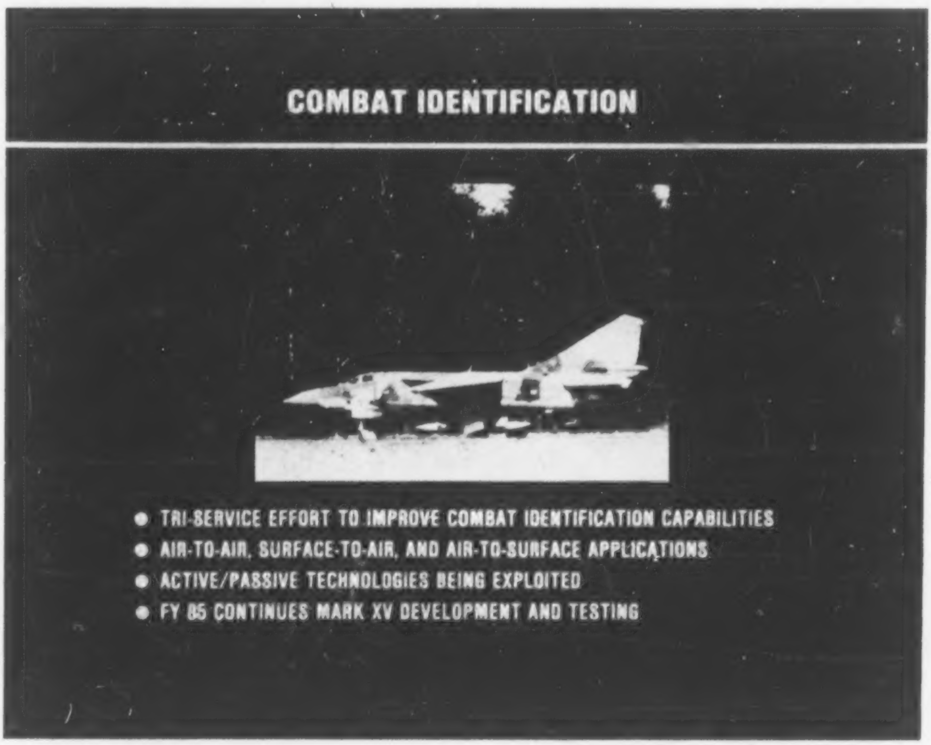
The next program we will deal with is expendable drone. That is Pave Tiger drone. It is an [deleted]. It has a sensor in the nose that seeks out the [deleted].

So, it complements our attempt to be able to [deleted]. This system does that.

The "wooden round" concept is the box that it come in. It moves out on this rail and launches from that. It is going to be ground launched and we will be buying a number of them specifically for the [deleted].

This is what we have in the program today, very limited RDT&E. We are just upgrading it based on some better information we have on the [deleted] capability.

Most of it is in procurement. We will be asking for about a thousand. It may go up further than that. There are other programs which I am sure you will recall.



COMBAT IDENTIFICATION

- TRI-SERVICE EFFORT TO IMPROVE COMBAT IDENTIFICATION CAPABILITIES
- AIR-TO-AIR, SURFACE-TO-AIR, AND AIR-TO-SURFACE APPLICATIONS
- ACTIVE/PASSIVE TECHNOLOGIES BEING EXPLOITED
- FY 85 CONTINUES MARK XV DEVELOPMENT AND TESTING

One of the family systems we are looking at is combat identification. There are a number of activities ongoing to upgrade our ability to identify friend or foe.

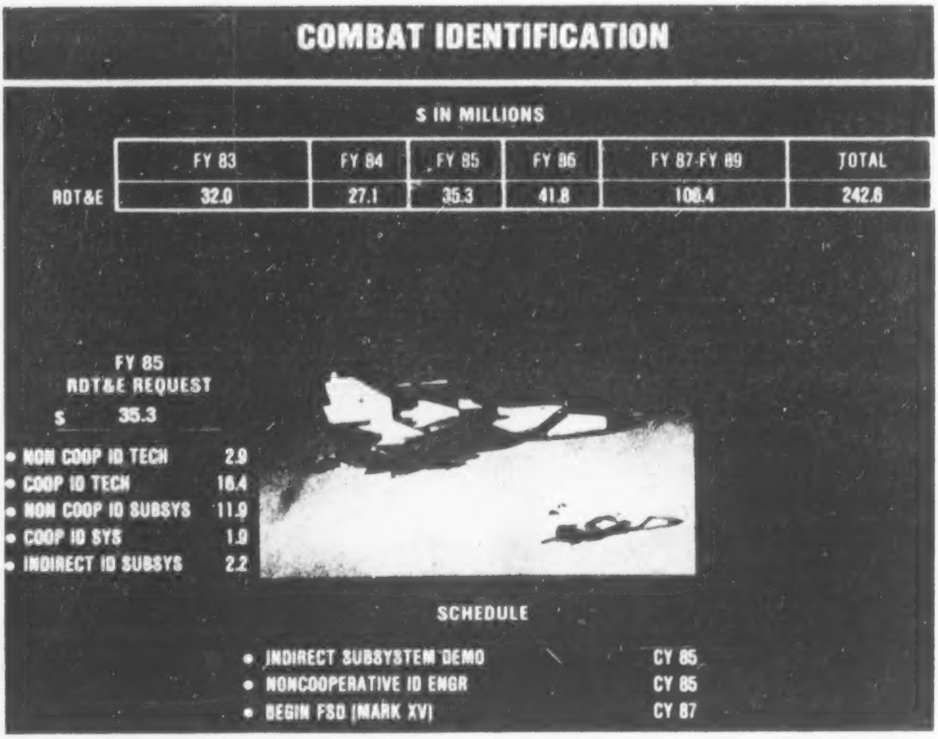
It is not only for air-to-air, but also for our Sam's, our own U.S. Sam forces.

We are looking at two basic areas, active and passive technologies.

One of the more prominent programs is the MK-15 IFF in this general category of combat identification.

Basically, what we are looking at is developing improvements to the current MK-12 that we have in the U.S. aircraft. All of our NATO allies have that. It is a friend identifier. It tells us that what we are seeing is a friendly aircraft.

We are also looking at indirect systems, noncooperative systems that are built in that can sense a foe whether he is squawking in code or not to allow us to identify positively an enemy as well as indirect systems that go into our command and control.



COMBAT IDENTIFICATION

$ IN MILLIONS

	FY 83	FY 84	FY 85	FY 86	FY 87-FY 89	TOTAL
RDT&E	32.0	27.1	35.3	41.8	106.4	242.6

FY 85
RDT&E REQUEST
$ 35.3

• NON COOP ID TECH	2.9
• COOP ID TECH	16.4
• NON COOP ID SUBSYS	11.9
• COOP ID SYS	1.9
• INDIRECT ID SUBSYS	2.2

SCHEDULE

• INDIRECT SUBSYSTEM DEMO	CY 85
• NONCOOPERATIVE ID ENGR	CY 85
• BEGIN FSD (MARK XV)	CY 87

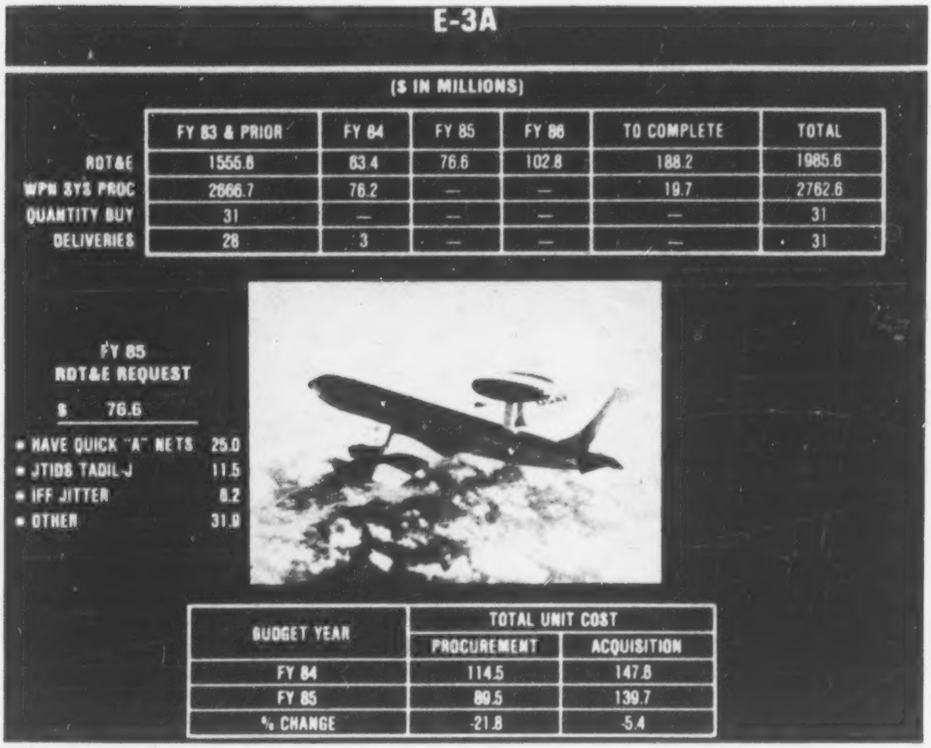
The MK-15, as you are well aware, is a substantial program that calls for the total replacement of all of our MK-12's as well as replacement of IFF's in NATO aircraft.

I know you are familiar with General Minter's comment with regard to that being one of his present needs, being able to identify friendly aircraft and get MK-15 in.

Current status on MK-15: There is discussion between OSD and the Germans on the particular type of wave band.

One final program—I was told to get off about 4:45, sir—I am prepared to go on as long as you can take it.

You are very familiar with the E-3A program. I won't spend a great deal of time on it. It has proved to be far more valuable than we anticipated when we first brought it in.



E-3A

($ IN MILLIONS)

	FY 83 & PRIOR	FY 84	FY 85	FY 86	TO COMPLETE	TOTAL
RDT&E	1555.6	83.4	76.6	102.8	188.2	1985.6
WPN SYS PROC	2666.7	76.2	—	—	19.7	2762.6
QUANTITY BUY	31	—	—	—	—	31
DELIVERIES	28	3	—	—	—	31

FY 85
RDT&E REQUEST
$ 76.6

• HAVE QUICK "A" NETS	25.0
• JTIDS TADIL-J	11.5
• IFF JITTER	8.2
• OTHER	31.9

BUDGET YEAR	TOTAL UNIT COST	
	PROCUREMENT	ACQUISITION
FY 84	114.5	147.6
FY 85	89.5	139.7
% CHANGE	-21.8	-5.4

This is for upgrade of the Have Quick radios and expanding JTID's into E-3A.

Senator GOLDWATER. What is your total inventory?

General GORTON. At the present time we have delivered the 29th aircraft, I think the 29th aircraft is being delivered this year, as I recall, Mr. Chairman, but I can check that.

Senator GOLDWATER. Are they basically stationed at Tinker?

General GORTON. Yes, sir, that is their main base.

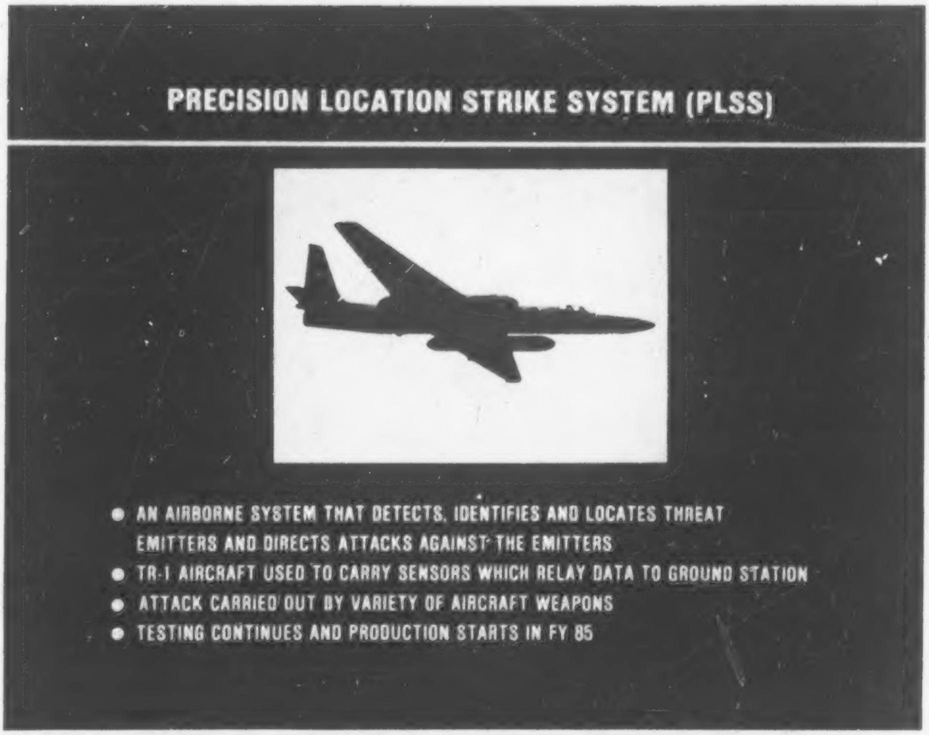
General RUSS. Thirty-four is our total. We have three that were preproduction models that were test airplanes. They have gone back to be modified. We bought 31 of them.

General GORTON. We delivered 29 to the active forces today.

We also have deployment in Iceland and at Okinawa and we have deployment in Saudi Arabia.

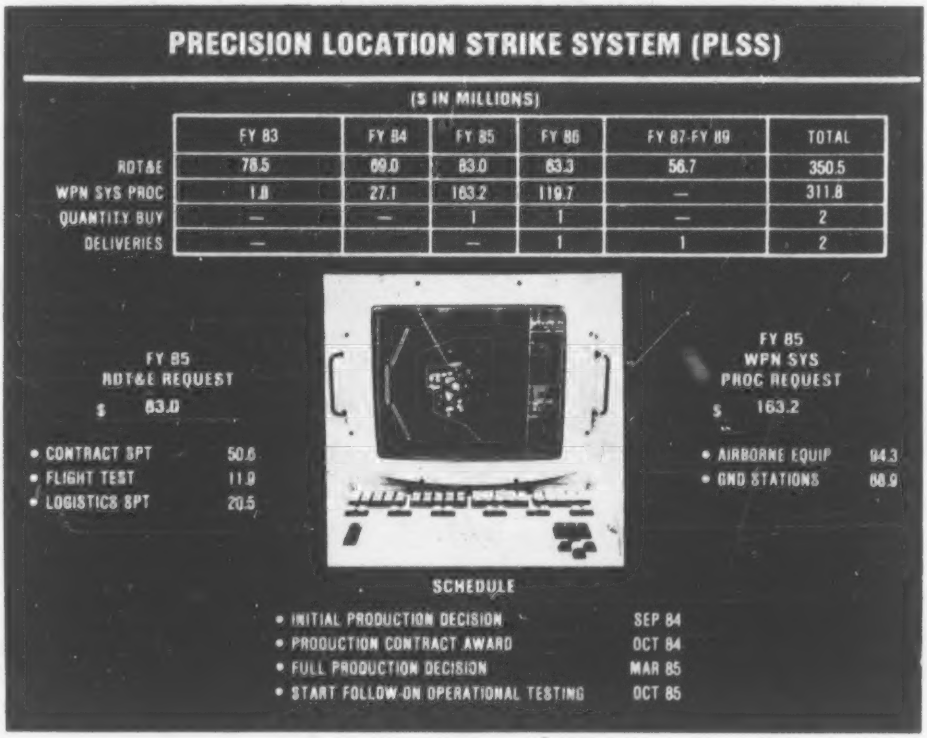
Thank you, Senator Goldwater, I will submit additional charts for the hearing record.

[The charts submitted by Gen. William A. Gorton follow:]



PRECISION LOCATION STRIKE SYSTEM (PLSS)

- AN AIRBORNE SYSTEM THAT DETECTS, IDENTIFIES AND LOCATES THREAT EMITTERS AND DIRECTS ATTACKS AGAINST THE EMITTERS
- TR-1 AIRCRAFT USED TO CARRY SENSORS WHICH RELAY DATA TO GROUND STATION
- ATTACK CARRIED OUT BY VARIETY OF AIRCRAFT WEAPONS
- TESTING CONTINUES AND PRODUCTION STARTS IN FY 85



PRECISION LOCATION STRIKE SYSTEM (PLSS)

($ IN MILLIONS)

	FY 83	FY 84	FY 85	FY 86	FY 87-FY 89	TOTAL
RDT&E	78.5	69.0	83.0	63.3	56.7	350.5
WPN SYS PROC	1.8	27.1	163.2	119.7	—	311.8
QUANTITY BUY	—	—	1	1	—	2
DELIVERIES	—		—	1	1	2

FY 85
RDT&E REQUEST
$ 83.0

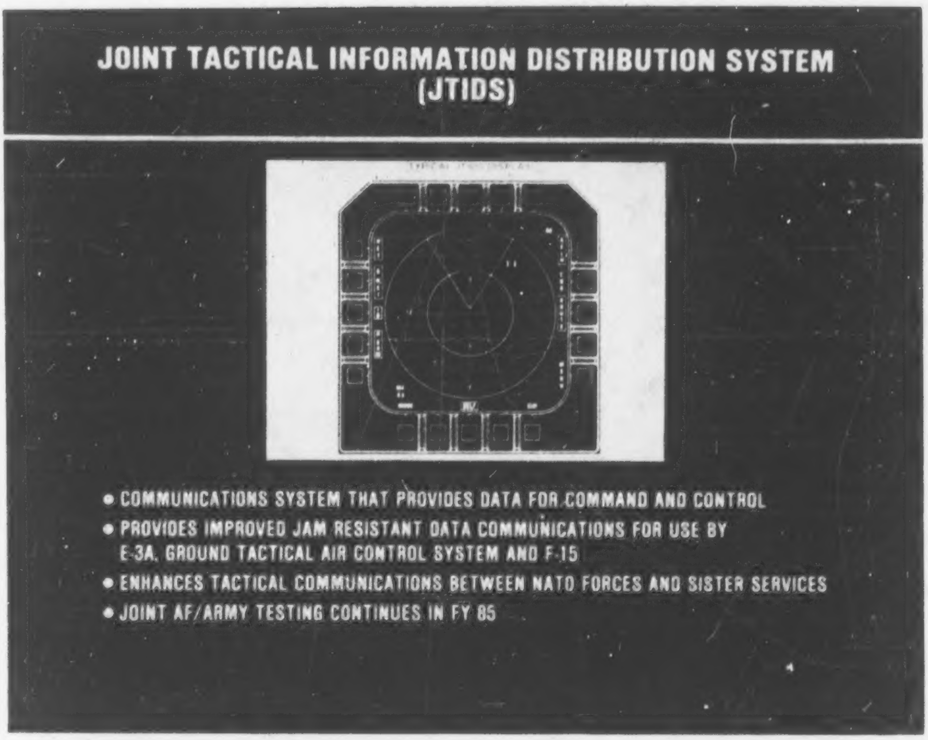
• CONTRACT SPT	50.6
• FLIGHT TEST	11.9
• LOGISTICS SPT	20.5

FY 85
WPN SYS
PROC REQUEST
$ 163.2

• AIRBORNE EQUIP	94.3
• GND STATIONS	68.9

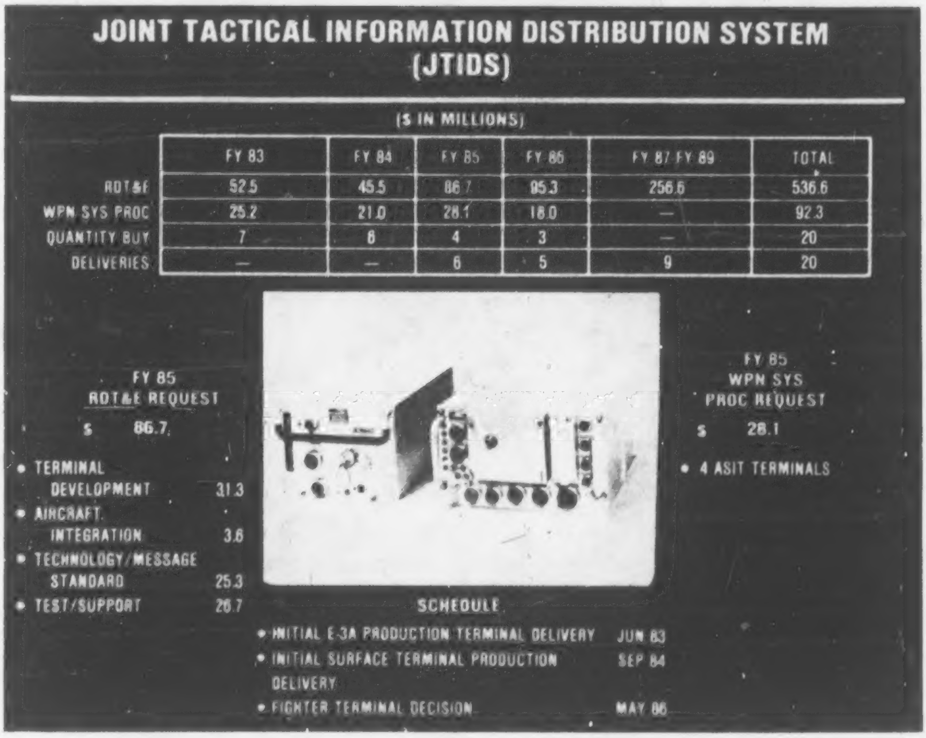
SCHEDULE

• INITIAL PRODUCTION DECISION	SEP 84
• PRODUCTION CONTRACT AWARD	OCT 84
• FULL PRODUCTION DECISION	MAR 85
• START FOLLOW-ON OPERATIONAL TESTING	OCT 85



JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM (JTIDS)

- COMMUNICATIONS SYSTEM THAT PROVIDES DATA FOR COMMAND AND CONTROL
- PROVIDES IMPROVED JAM RESISTANT DATA COMMUNICATIONS FOR USE BY E-3A, GROUND TACTICAL AIR CONTROL SYSTEM AND F-15
- ENHANCES TACTICAL COMMUNICATIONS BETWEEN NATO FORCES AND SISTER SERVICES
- JOINT AF/ARMY TESTING CONTINUES IN FY 85



JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM (JTIDS)

($ IN MILLIONS)

	FY 83	FY 84	FY 85	FY 86	FY 87-FY 89	TOTAL
RDT&E	52.5	45.5	86.7	95.3	256.6	536.6
WPN SYS PROC	25.2	21.0	28.1	18.0	—	92.3
QUANTITY BUY	7	6	4	3	—	20
DELIVERIES	—	—	6	5	9	20

FY 85
RDT&E REQUEST
$ 86.7

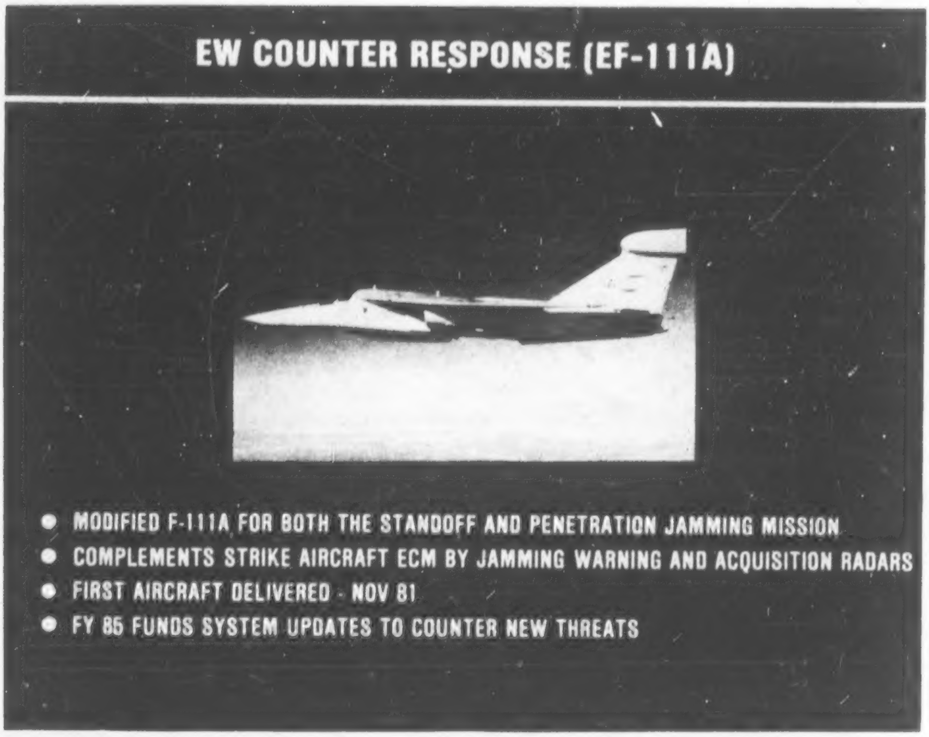
• TERMINAL DEVELOPMENT	31.3
• AIRCRAFT INTEGRATION	3.6
• TECHNOLOGY/MESSAGE STANDARD	25.3
• TEST/SUPPORT	26.7

FY 85
WPN SYS
PROC REQUEST
$ 28.1

- 4 ASIT TERMINALS

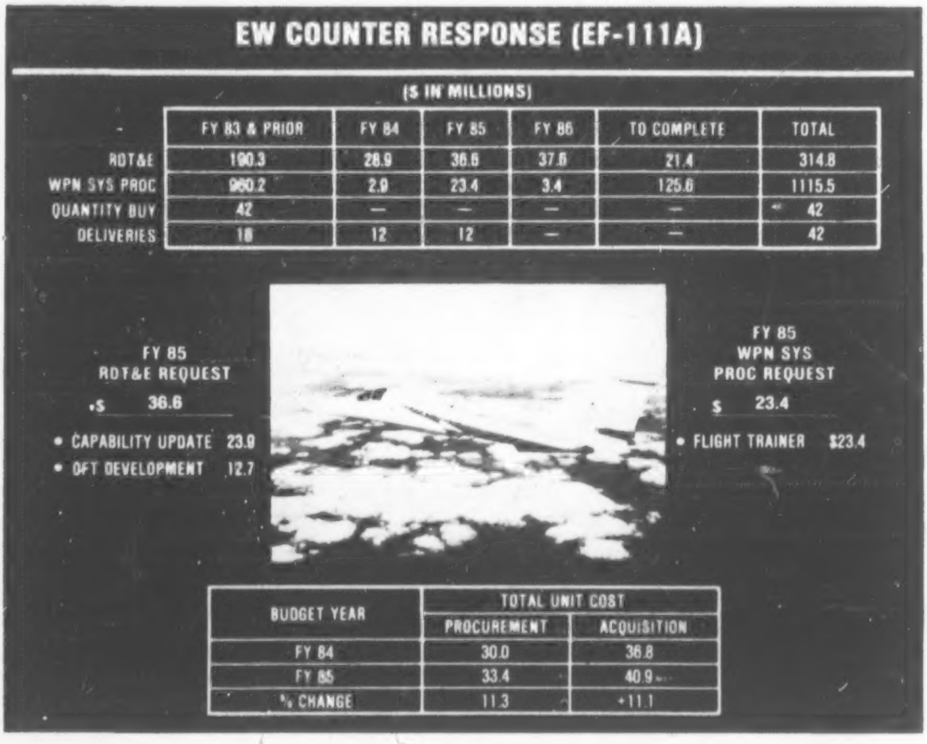
SCHEDULE

• INITIAL E-3A PRODUCTION TERMINAL DELIVERY	JUN 83
• INITIAL SURFACE TERMINAL PRODUCTION DELIVERY	SEP 84
• FIGHTER TERMINAL DECISION	MAY 86



EW COUNTER RESPONSE (EF-111A)

- MODIFIED F-111A FOR BOTH THE STANDOFF AND PENETRATION JAMMING MISSION
- COMPLEMENTS STRIKE AIRCRAFT ECM BY JAMMING WARNING AND ACQUISITION RADARS
- FIRST AIRCRAFT DELIVERED - NOV 81
- FY 85 FUNDS SYSTEM UPDATES TO COUNTER NEW THREATS



EW COUNTER RESPONSE (EF-111A)

($ IN MILLIONS)

-	FY 83 & PRIOR	FY 84	FY 85	FY 86	TO COMPLETE	TOTAL
RDT&E	190.3	28.9	36.6	37.6	21.4	314.8
WPN SYS PROC	960.2	2.9	23.4	3.4	125.6	1115.5
QUANTITY BUY	42	—	—	—	—	42
DELIVERIES	18	12	12	—	—	42

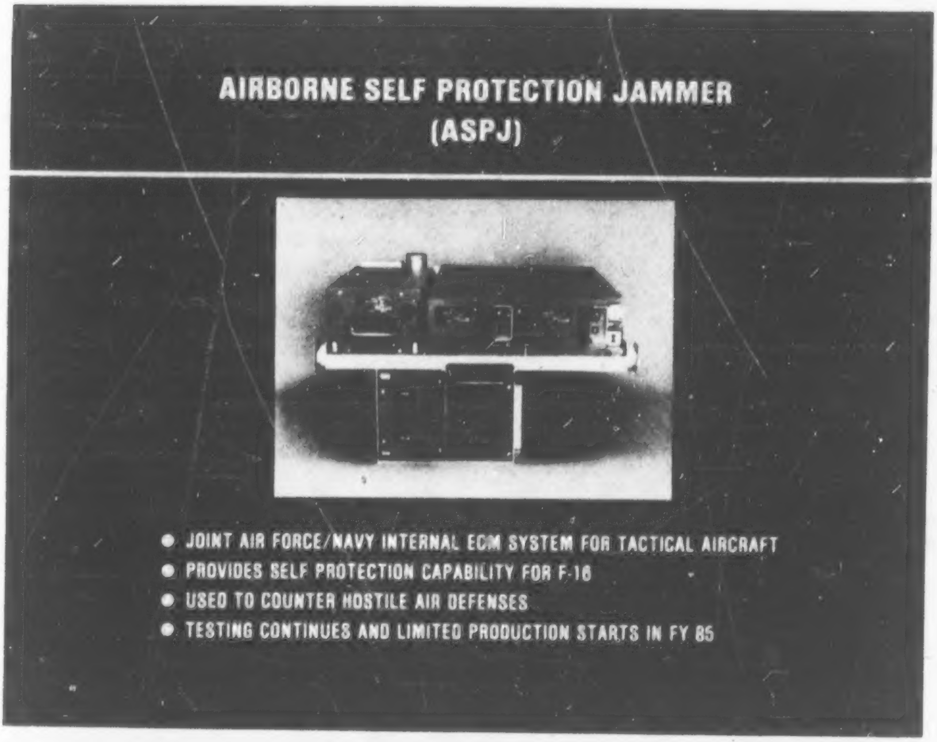
FY 85
RDT&E REQUEST
$ 36.6

- CAPABILITY UPDATE 23.9
- OFT DEVELOPMENT 12.7

FY 85
WPN SYS
PROC REQUEST
$ 23.4

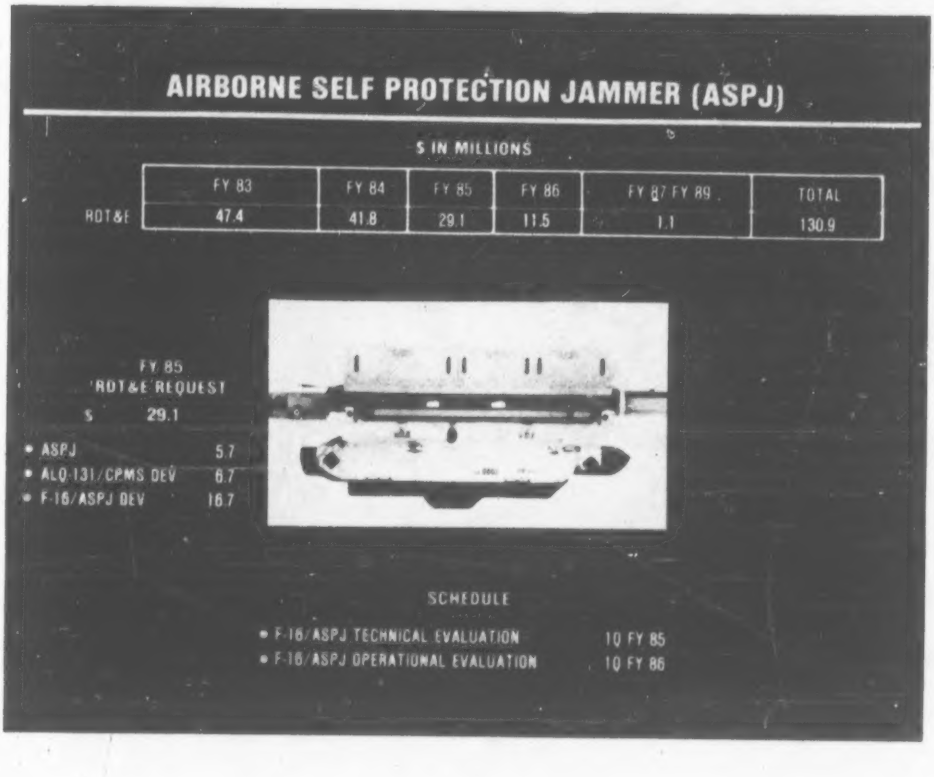
- FLIGHT TRAINER $23.4

BUDGET YEAR	TOTAL UNIT COST	
	PROCUREMENT	ACQUISITION
FY 84	30.0	36.8
FY 85	33.4	40.9
% CHANGE	11.3	+11.1



AIRBORNE SELF PROTECTION JAMMER (ASPJ)

- JOINT AIR FORCE/NAVY INTERNAL ECM SYSTEM FOR TACTICAL AIRCRAFT
- PROVIDES SELF PROTECTION CAPABILITY FOR F-16
- USED TO COUNTER HOSTILE AIR DEFENSES
- TESTING CONTINUES AND LIMITED PRODUCTION STARTS IN FY 85



AIRBORNE SELF PROTECTION JAMMER (ASPJ)

$ IN MILLIONS

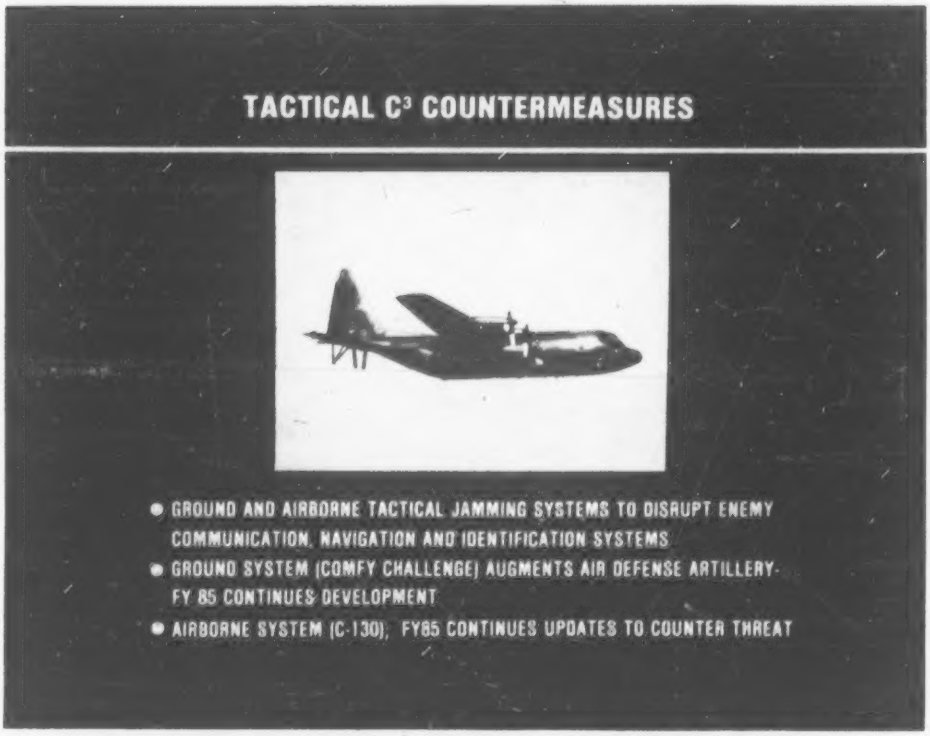
	FY 83	FY 84	FY 85	FY 86	FY 87 FY 89	TOTAL
RDT&E	47.4	41.8	29.1	11.5	1.1	130.9

FY 85
RDT&E REQUEST
$ 29.1

• ASPJ	5.7
• ALQ-131/CPMS DEV	6.7
• F-16/ASPJ DEV	16.7

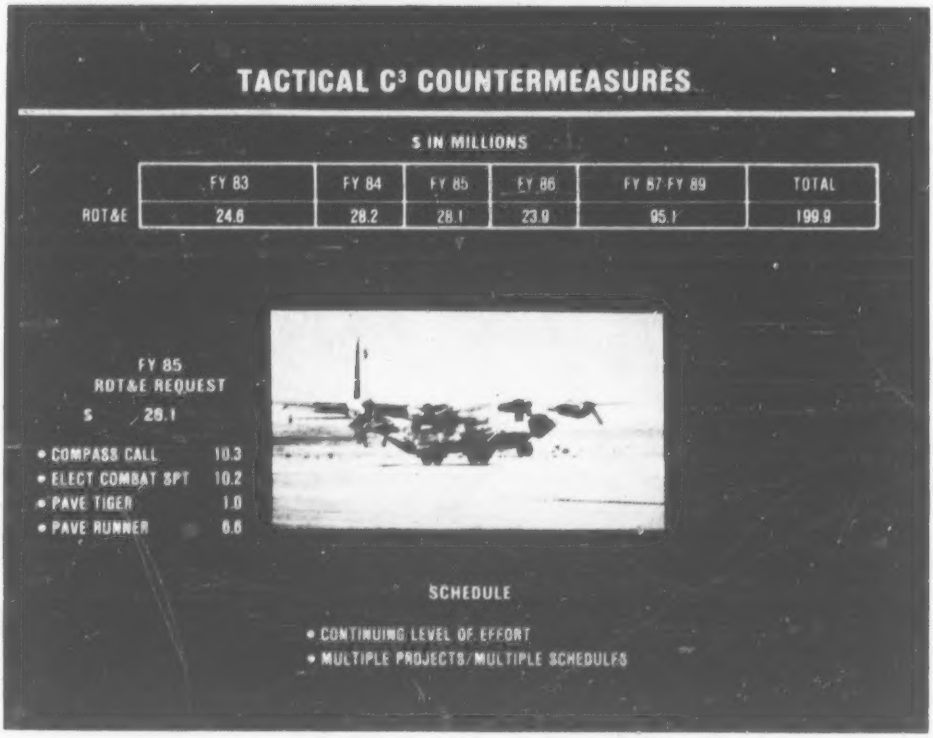
SCHEDULE

• F-16/ASPJ TECHNICAL EVALUATION	1Q FY 85
• F-16/ASPJ OPERATIONAL EVALUATION	1Q FY 86



TACTICAL C³ COUNTERMEASURES

- GROUND AND AIRBORNE TACTICAL JAMMING SYSTEMS TO DISRUPT ENEMY COMMUNICATION, NAVIGATION AND IDENTIFICATION SYSTEMS
- GROUND SYSTEM (COMFY CHALLENGE) AUGMENTS AIR DEFENSE ARTILLERY-FY 85 CONTINUES DEVELOPMENT
- AIRBORNE SYSTEM (C-130), FY85 CONTINUES UPDATES TO COUNTER THREAT



TACTICAL C³ COUNTERMEASURES

$ IN MILLIONS

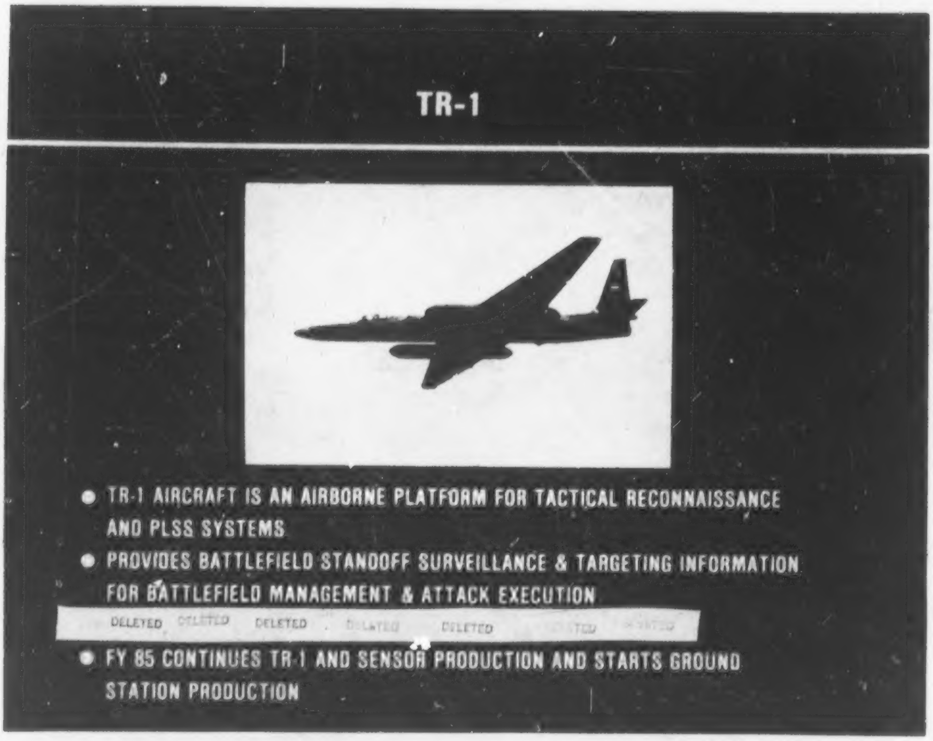
	FY 83	FY 84	FY 85	FY 86	FY 87-FY 89	TOTAL
RDT&E	24.6	28.2	28.1	23.9	95.1	199.9

FY 85
RDT&E REQUEST
$ 28.1

• COMPASS CALL	10.3
• ELECT COMBAT SPT	10.2
• PAVE TIGER	1.0
• PAVE RUNNER	6.6

SCHEDULE

- CONTINUING LEVEL OF EFFORT
- MULTIPLE PROJECTS/MULTIPLE SCHEDULES



TR-1

- TR-1 AIRCRAFT IS AN AIRBORNE PLATFORM FOR TACTICAL RECONNAISSANCE AND PLSS SYSTEMS
- PROVIDES BATTLEFIELD STANDOFF SURVEILLANCE & TARGETING INFORMATION FOR BATTLEFIELD MANAGEMENT & ATTACK EXECUTION

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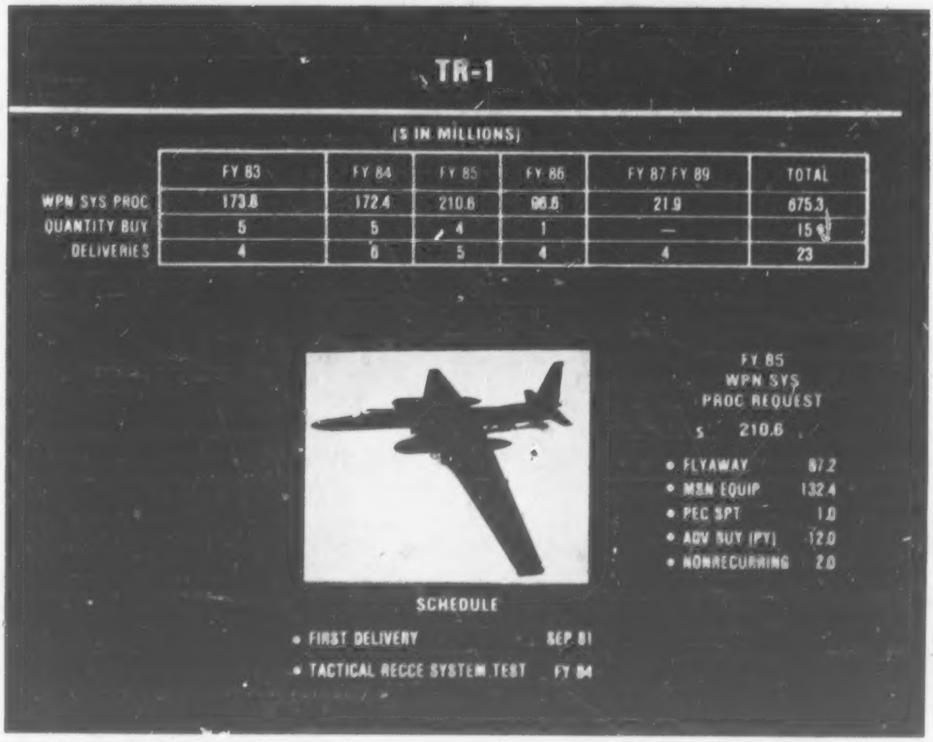
- FY 85 CONTINUES TR-1 AND SENSOR PRODUCTION AND STARTS GROUND STATION PRODUCTION



TR-1

($ IN MILLIONS)

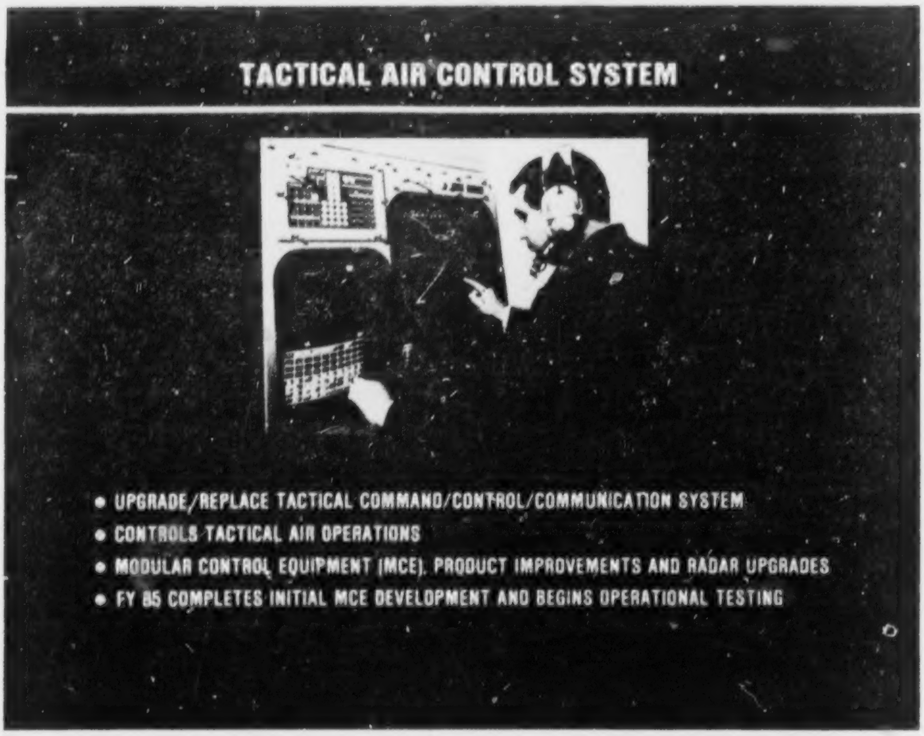
	FY 83	FY 84	FY 85	FY 86	FY 87 FY 89	TOTAL
WPN SYS PROC	173.8	172.4	210.6	96.6	21.9	675.3
QUANTITY BUY	5	5	4	1	—	15
DELIVERIES	4	6	5	4	4	23

FY 85
WPN SYS
PROC REQUEST
$ 210.6

• FLYAWAY	67.2
• MSN EQUIP	132.4
• PEC SPT	1.0
• ADV BUY (PY)	12.0
• NONRECURRING	2.0

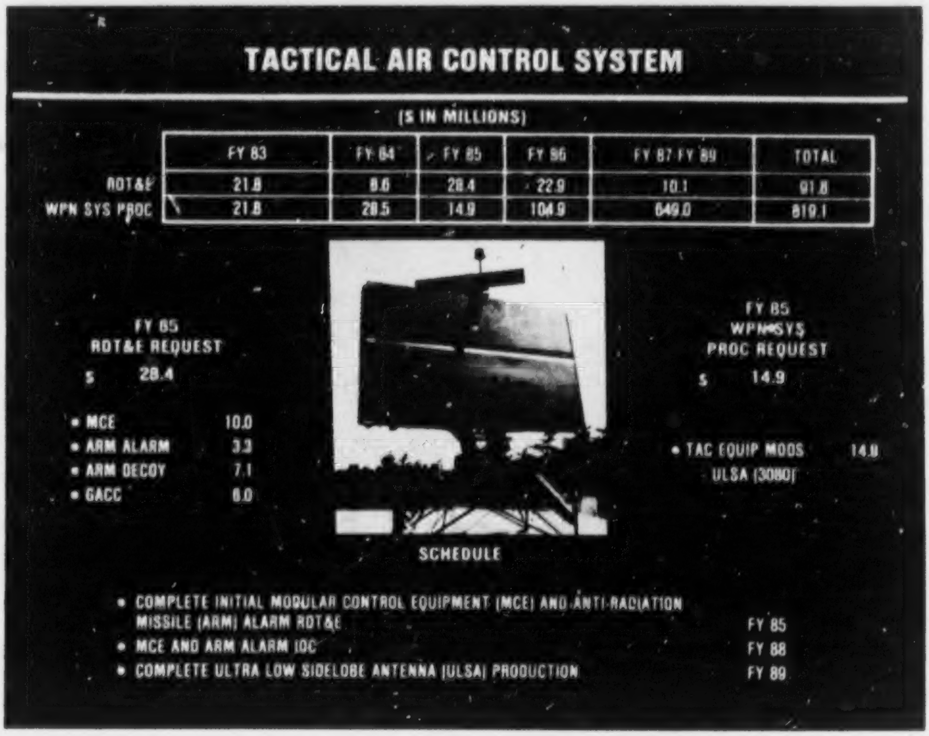
SCHEDULE

• FIRST DELIVERY	SEP 81
• TACTICAL RECCE SYSTEM TEST	FY 84



TACTICAL AIR CONTROL SYSTEM

- UPGRADE/REPLACE TACTICAL COMMAND/CONTROL/COMMUNICATION SYSTEM
- CONTROLS TACTICAL AIR OPERATIONS
- MODULAR CONTROL EQUIPMENT (MCE), PRODUCT IMPROVEMENTS AND RADAR UPGRADES
- FY 85 COMPLETES INITIAL MCE DEVELOPMENT AND BEGINS OPERATIONAL TESTING



TACTICAL AIR CONTROL SYSTEM

($ IN MILLIONS)

	FY 83	FY 84	FY 85	FY 86	FY 87-FY 89	TOTAL
RDT&E	21.8	8.6	28.4	22.9	10.1	91.8
WPN SYS PROC	21.8	28.5	14.9	104.9	649.0	819.1

FY 85
RDT&E REQUEST
$ 28.4

• MCE	10.0
• ARM ALARM	3.3
• ARM DECOY	7.1
• GACC	8.0

FY 85
WPN SYS
PROC REQUEST
$ 14.9

• TAC EQUIP MODS ULSA (3080)	14.9

SCHEDULE

• COMPLETE INITIAL MODULAR CONTROL EQUIPMENT (MCE) AND ANTI-RADIATION MISSILE (ARM) ALARM RDT&E	FY 85
• MCE AND ARM ALARM IOC	FY 88
• COMPLETE ULTRA LOW SIDELOBE ANTENNA (ULSA) PRODUCTION	FY 89

Senator GOLDWATER. Gentlemen, I want to thank you.

We will unquestionably have you gentlemen back or we will be in touch with you relative to new costs and estimates. It will be a very difficult thing for us to achieve the type of force structure that we want to achieve and not violate the President's conception of what we should have.

All of us on this subcommittee and full committee are greatly appreciative, as is the staff, of your willingness to cooperate. That is the biggest tool we have.

Out of it, I am sure we can come up with something that will carry us on. The biggest weapon we have, of course, is the men.

As you know, the quality of our men has never been as good as it is now.

Several members of the subcommittee have submitted questions to be answered for the record and we would appreciate answers as soon as possible.

[Questions submitted with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR BARRY GOLDWATER, ANSWERS SUPPLIED BY THE DEPARTMENT OF THE AIR FORCE

INTEROPERABLE IFF SYSTEM

Senator GOLDWATER. General, one of the major problems in any NATO air battle will be the difficulty of identifying friend from foe. We have sought for several years to obtain an agreement among the NATO allies for an interoperable IFF system that would solve this problem. What is the current status of those negotiations?

ANSWER. Although there is no formal agreement yet on the frequency band to be used for the direct question-and-answer part of the NATO Identification system (NIS), substantial progress has been made toward achieving agreement. The United States, UK, and France have agreed to the U.S. compromise approach of using both a D-band (formerly called L-band) operating frequency and an interrogation operating frequency in the radar frequency range. The compromise is called D-band/radar mode. The United States is participating in a German study of frequency compatability to determine the new system will not cause interference problems with other electronic systems operating in the D-band. This study will be complete in December 1984 and the results out within four months. U.S. studies indicate there will be no increase in interference when the Mark XV is fielded relative to the current Mark X/XII. Therefore, we anticipate German agreement will be secured following completion of their study.

IFF SYSTEM

Senator GOLDWATER. Is there an agreement yet on the frequency band and the wave form to be used for this system?

In the absence of such an agreement, what course of action is the Air Force following?

ANSWER. Although there is no formal agreement yet on the frequency band to be used for the direct question-and-answer part of the NATO Identification System (NIS), substantial progress has been made toward achieving agreement. The United States, UK, and France have agreed to the U.S. compromise approach of using both a D band (formerly called L band) operating frequency and an interrogation operating frequency in the radar frequency range. The compromise is called D band/radar mode. The USAF is participating in a German study of frequency compatibility to win German agreement. The wave form for the D band/radar mode compromise has been agreed to and the United States has agreed not to make unilateral changes in the waveform. All four countries are building brassboard models using the U.S. D band/radar mode compromise for evaluation.

Even though there is not formal agreement on the compromise system, the Air Force, as lead service, is proceeding with the Mark XV IFF program and planning to enter the Demonstration-Validation phase in June 1984 after Defense Systems Acquisition Review Council (DSARC) review.

OTHER IDENTIFICATION TECHNIQUES

Senator GOLDWATER. In addition to IFF what other identification techniques are being developed? Are any of these efforts joint efforts with our NATO allies?

ANSWER. Since no single identification technique will provide the required timely and accurate identification of unknown airborne targets, the United States is pursuing a complementary mix of direct and indirect, cooperative and noncooperative identification techniques.

The Mark XV question-and-answer IFF system is a direct, cooperative technique and is an essential element of the identification suite. Other techniques the United States is pursuing involve direct non-cooperative techniques where the target does not knowingly participate in the identification process. These techniques include:

(1) Dual Mode Recognition (DMR)—[Deleted] (to begin incorporation on F-15s this year and F-16s in fiscal year 1985);

(2) Radio Frequency Identification (RFID)—[Deleted.]

(3) Multi-Source Integration (MSI)—a fusion technique to correlate inputs from various ID sensors that reduces pilot workload and improves the probability of correct ID;

(4) [Deleted]. These and other direct, non-cooperative techniques are not releasable to other countries because of the technology involved and the sensitivity of the techniques' existence to enemy knowledge.

Indirect techniques use the command and control network to pass along identification information from sensors to the proper platforms. We are participating in a joint effort with NATO to improve our indirect ID capability in Europe. The NATO countries have agreed to the architecture for the system. The United States is developing a new sensor and processor for a European demonstration in fiscal year 1985. After the demonstration, it is planned that the NATO Standardization Agreement (STANAG) will be ratified and then the NATO countries will be able to produce equipment to a common standard.

INTEROPERABLE EQUIPMENT BETWEEN SERVICES

Senator GOLDWATER. General, the Congress has insisted that any future anti-jamming communications equipment developed by one service be inter-operable with the equipment of the other services.

Will EJS be inter-operable with the voice system of the Navy JTIDS?

ANSWER. EJS will be interoperable with the voice system of Navy JTIDS.

Air Force EJS plans now call for including a Time Division Multiple Access (TDMA) voice capability in L-Band. Since Navy JTIDS is required to be backward compatible to TDMA in L-Band, an EJS TDMA voice capability in L-Band will insure interoperability. This capability will also provide for interoperability with Army and allied JTIDS users.

In addition, EJS will use a unique waveform in an alternate band to meet the Air Force's requirement for a high level of jam-resistance. While specifically optimized to do the high jam-resistant voice job, this unique waveform will have many characteristics in common with the TDMA waveform. This should enable taking advantage of the processor capability used for TDMA voice in L-Band.

This approach should adequately and appropriately provide for interoperability with other JTIDS users and satisfy the Air Force's requirement for a highly jam-resistant voice capability.

EJS WAVE FORM

Senator GOLDWATER. Which wave form has the Air Force selected for EJS?

ANSWER. EJS will use two different waveforms. Air Force EJS plans now call for use of a Time Division Multiple Access (TDMA) waveform in L-Band to provide for compatibility JTIDS. This will provide for Air Force interoperability with Navy, Army and allied JTDIS in L-Band at a medium level of jam-resistance.

In addition, EJS will use a unique waveform in an alternate band to meet the Air Force's requirement for a high level of jam-resistance. While specifically optimized to do the high jam-resistance voice job, this unique waveform will have many characteristics in common with TDMA waveform. This should enable taking advantage of the processor capability used for TDMA voice in L-Band.

This approach should adequately and appropriately provide for interoperability with other JTIDS users and satisfy the Air Force's requirement for a highly jam-resistant voice capability.

MODIFICATIONS TO SYSTEMS

Senator GOLDWATER. What modifications either to the EJS system or the Navy JTIDS will be required in order to ensure interoperability?

ANSWER. To insure interoperability between EJS and Navy JTIDS, Air Force EJS plans now call for including a Time Division Multiple Access (TDMA) voice capability in L-Band. Since Navy JTIDS is required to be backward compatible to TDMA in L-Band, an EJS TDMA voice capability in L-Band will insure interoperability. This capability will also provide for interoperability with Army and allied JTIDS users.

In addition, EJS will use a unique waveform in an alternate band to meet the Air Force's requirement for a high level of jam-resistance. While specifically optimized to do the high jam-resistant voice job, this unique waveform will have many characteristics in common with the TDMA waveform. This should enable taking advantage of the processor capability used for TDMA voice in L-Band.

This approach should adequately and appropriately provide for interoperability with other JTIDS users and satisfy the Air Force's requirement for a highly jam-resistant voice capability.

AIR FORCE/ARMY COMMUNICATIONS SYSTEMS

Senator GOLDWATER. How will the Air Force secure voice systems interoperate with Army communications systems.

ANSWER. Air Force-Army interoperability of jam-resistant secure voice systems will be achieved via three programs: Single Channel Ground and Air Radio Systems (SINCGARS), HAVE QUICK, and Joint Tactical Information Distribution System (JTIDS). The Air Force is going to implement SINCGARS, the Very High Frequency bank system being developed by the Army. The Army will buy HAVE QUICK radios, the Ultra High Frequency band system being developed by the Air Force. The Air Force and Army are buying JTIDS, which we are developing together.

SINCGARS and HAVE QUICK will provide voice communications interoperability. JTIDS will provide data interoperability.

PROJECTED COST OF F-110

Senator GOLDWATER. General, the recently announced selection of the alternate fighter engine is expected to save the government several billion dollars over the next decade. What is the total projected cost required to develop the GE F-110 engine?

ANSWER. The projected cost to conduct the full scale development of the F-110 engine (fiscal year 1982-86) is approximately $260 million (then year). The initial demonstration of this engine's capabilities was carried out under the engine model derivative program between 1979 and 1981 on what was then known as the F-101 derivative fighter engine for approximately $116 million (then year).

MODIFICATION FOR F-100

Senator GOLDWATER. What further modifications are planned for the PW-F-100? What is the cost of these modifications?

ANSWER. We plan to preserve the option to demonstrate higher thrust advanced derivatives of the F-100 and F-110 engines. When plans are confirmed, costs and development tasks will be identified in our budget request.

Additionally, as an ongoing effort, the engine component improvement program (CIP) will continue to pursue durability, reliability and maintainability improvements for all Air Force engines where warranted.

ADDITIONAL LOGISTICS COSTS

Senator GOLDWATER. What additional logistics costs will be incurred as a result of having yet another fighter engine in the inventory?

ANSWER. Both the Tactical Air Command and the Air Force Logistics Command state that supporting the two new fighter engines (the General Electric F-110 and the Pratt & Whitney F-100-220) is manageable. The negligible cost increase in supporting the new engines is outweighed by significant improvements over the existing engines in the areas of operability, durability, reliability, and maintainability. At the depot level, the logistics support and supply lines are already established. The introduction of the two engines will require relatively minor expansion of the existing level of effort. Oklahoma City Air Logistics Center (OC-ALC) has established complete support for the F-101 and the F-108 engines which have a great deal of commonality with the F-110 engine. And, of course, at San Antonio Air Logistics Center (SA-ALC), there is an existing depot for the F-100 engine which will be easily expanded to support the F-100-220. Base level support will also experience a relatively minor impact as these engines are introduced. No new skills are required, only training on the specific engines. That training, the applicable tech orders, and training planning are accomplished as part of the acquisition. The base support equipment, such as the test cells, work stands, trailers, and shipping containers will all be common with the existing equipment. Only the adapters and engine specific tools are new. Both engines will have full diagnostic systems, will not require functional trim, and will be significantly more reliable and durable. As mentioned before, these benefits far outweigh the cost of introducing an additional engine into the inventory. The overall life cycle support costs will be reduced significantly with the outyear competition and the stringent warranty providing the leverage to make sure the savings are realized.

ESTIMATED SAVINGS IN COMPETING

Senator GOLDWATER. Taking into account these and all other additional costs associated with the AFE program what net savings do you estimate will result from this approach to procuring fighter engines?

ANSWER. The 20-year life cycle cost for the AFE engines is 2 to 3 billion dollars less than procuring and operating F-100 (3) engines over the same period. The net savings realized would be a function of the acquisition strategy (six annual buys, an annual buy with a 3-year multiyear buy followed by two more annual buys, or an annual buy followed by a 5-year multiyear buy) pursued by the Air Force in the future.

SPECIFIC IMPROVEMENTS

Senator GOLDWATER. What specific improvements in engine performance, reliability, maintainability, and availability are expected as a result of this competition?

ANSWER. Based on an Air Force assessment of Pratt and Whitney and General Electric alternate fighter engine (AFE) proposals, the following improvements are expected as a result of the inherent capabilities of the new engines compared to a fiscal year 1985 F-100(3) engine.

40 to 60 percent reduction in engine operating cost per engine flight hour.

45 to 60 percent reduction in engine maintenance man hours per engine flight hour.

40 to 60 percent reduction in engine removals per 1,000 flight hours.

No functional trim requirement.

Warranted retention of thrust at or above 98 percent and specific fuel consumption at or below 105 percent of specification levels for 3,000 total accumulated cycles or 8 years.

26 to 36 percent increase in engine sortie generation potential.

ENGINE WARRANTIES

Senator GOLDWATER. Please provide for the record a comparison of the engine warranties given in 1980 with those which will be required on fighter engines procured in fiscal year 1985.

ANSWER. In 1980, the Air Force acquired F-100 engines from Pratt & Whitney for use in fighter aircraft. At that time only a warranty of supplies was included covering materials and workmanship defects. In February, 1981 the warranty provisions of the F-100 acquisition were expanded to include a high pressure turbine warranty and 2 year/200 hour expanded service warranty. Since then, continual improvements have been made in the F-100 warranty coverage.

In fiscal year 1985 the Air Force will procure a mix of F-100 engines and Alternate Fighter Engines (F-100-220 (P&W) and F-110 (GE)). The fiscal year 1985 F-100 engine will have the latest in the evolution of F-100 warranty coverage as follows:

(a) Standard supply warranty covering defects in materials and workmanship;

(b) Warranty of engines, modules, and accessories found to be unserviceable within 200 hours operating time or two years after acceptance, whichever occurs first;

(c) Warranty of the high pressure turbine for 1,350 total accumulated cycles (TAC cycles) or 60 months, whichever occurs first; and

(d) Warranty of the fan disk for 3,000 TAC cycles or 10 years, whichever occurs first.

The fiscal year 1985 procurement of the Alternate Fighter Engines will include warranty coverage in three key areas:

(a) Warranty against engine, module, component or part unserviceability and defects in materials and workmanship for 1,000 flight hours or 3 years, whichever occurs first;

(b) Warranty of the engine hot section (combustor and high pressure turbine) durability of at least 3,000 TAC cycles or 8 years, whichever occurs first.

(c) Warranty of the long-term performance retention of the engines for 3,000 TAX cycles or 8 years, whichever occurs first.

The effect of section 794 of the fiscal year 1984 DOD Appropriation Act on these planned warranties has not been determined. Prior to award of either fiscal year 1985 requirement, the impact of the guaranty statute must be assessed.

AMRAAM/SPARROW COST DIFFERENCE

Senator Goldwater. General, the Advanced Medium Range Air-to-Air Missile (AMRAAM) has experienced both cost and technical problems over the last three years. The total R&D cost is now estimated in excess of $1 billion and the total program cost is now $14 billion. Despite these cost increases, as recently as last year the Air Force was still estimating that the AMRAAM would cost less than the Sparrow missile.

In view of the cost growth in the AMRAAM program does the Air force still estimate that the AMRAAM will cost less than the Sparrow?

Answer. The Air Force does not expect the AMRAAM to cost less than the AIM-7 missile. As reported in the Dec 1983 SARs, the flyaway costs for AMRAAM are estimated at $243,000 and $185,000 for AIM-7M in fiscal year 1983 dollars. The AMRAAAM will be a much more capable missile than the AIR-7 in meeting the threat and defending our aircraft; these increased capabilities contribute to the higher unit costs associated with AMRAAM.

AMRAAM VALIDATION PHASE SCHEDULE

Senator Goldwater. A GAO report dated February 28, 1983, claimed that validation phase scheduled for the AMRAAM was unrealistic and that the full-scale development schedule also seemed to be unreasonably ambitious.

Since that report was published, what changes have been made in the AMRAAM development and production schedules?

How have these schedule changes affected the cost of AMRAAM?

Answer. Since the GAO report of February 28, 1983, there have been some delays in the schedules. The full scale development (FSD) program internal events schedule has items which were accomplished ahead of schedule and some that will be completed from zero to six months late. We expect the FSD program completion date to slip approximately 3 months.

The Lot I long lead production option was to be exercised on Feb 1, 1984. Due to delays in the FSD schedule, the option exercise date was slipped (at no cost to the government) to May 1, 1984. The actual Air Force decision date is yet to be determined.

We believe our FSD and production schedules to be ambitious, but they are manageable. To date, the schedule changes we have experienced have not affected the cost of AMRAAM over the current program estimate.

EF-111 PRODUCTION PROGRAM

Senator Goldwater. General, what is the current status of the EF-111 production program? What has the performance been to date?

Answer. As of March 1984, 22 of the 42 aircraft have been delivered. This is well within the contractual production schedule of one per month.

The Air Force EF-111A participated in several exercises operating in radar environments much like those expected in NATO. The EF-111A performed up to our expectations and exceed them in some cases.

REQUIREMENT FOR AIRCRAFT

Senator Goldwater. The original requirement for the EF-111 program in the early 1970's was for 42 aircraft. Will 42 aircraft provide sufficient attrition aircraft to support the 36 Primary Aircraft Authorization?

Answer. Forty-two aircraft will not provide sufficient attrition aircraft to support 36 Primary Aircraft Authorization over the projected life of the EF-111. We recognize the need for additional tactical jamming capability and the Air Force is investigating all available alternatives.

EF-111 UPGRADE PROGRAM

Senator GOLDWATER. What is the current status of the EF-111 upgrade program? What equipment will be replaced in the EF-111?

ANSWER. The EF-111A upgrade program is entering full scale development (FSD) during this fiscal year following successful completion of the concept and validation phases.

The upgrade program involves modifying or replacing the current encoder, processor, and exciter equipments. This modification, along with associated software changes are designed to counter threats that will be in place in the 1995 time frame.

UPGRADED AIRCRAFT

Senator GOLDWATER. What is the proposed operational time frame for the upgraded aircraft? How does this upgrade compare with the Navy's EA-6B program?

ANSWER. The EF-111A aircraft with the upgraded systems should be operational from 1990 until well past the year 2000.

The EF-111A and EA-6B missions differ, which causes the two programs to focus on different improvements. The programs continue to exchange technology developed by each other. Some examples are the use of the EA-6B processor approach in the EF-111A. Also, the EF-111A's exciter will be available for future EA-6B updates.

F-16 COST INCREASE

Senator GOLDWATER. General according to the budget documents submitted to the Congress, the F-16 appears to experience a subtantial cost increase in fiscal year 1985.

Would you provide the committee with a breakdown of the cost of the F-16 in fiscal year 1985 and explain in detail the difference between the fiscal year 1984 until cost and the fiscal year 1985 until cost.

ANSWER. Between fiscal year 1984 and fiscal year 1985, the unit flyaway cost increased from $13.3M to $19.0M. A breakout of this unit cost increase follows:

[In millions of dollars]

Fiscal year 1984 unit flyaway cost	13.3
Competition engine delta	3.2
Advanced self protection jammer (ASPJ)	1.3
Other changes	0.4
Inflation	0.8
Fiscal year 1985 unit flyaway cost	19.0

The competition engine delta represents the funds budgeted to protect the engine competition. Now that that decision has been made, this delta will be adjusted downward. This adjustment is significant and will be provided to Congress when staffing is complete.

The fiscal year 1985 buy is the first year that ASPJ is incorporated in production aircraft with an associated aircraft cost increase.

The other increases are associated with AMRAAM launchers, missile remote interface units (MRIUs), ALR-74 radar warning receivers, a decrease in non-recurring cost, and other miscellaneous minor changes.

The inflation increase is based on standard DOD inflation indices.

F-16 MULTIYEAR CONTRACT

Senator GOLDWATER. The F-16 is proposed for a multi-year contract for fiscal years 1986-89 with long lead funding beginning in fiscal year 1985.

What savings do you project for this multi-year contract when compared with the cost of annual contracts?

ANSWER. The savings associated with the multi-year procurement of 180 aircraft per year fiscal years 1986-89 is $358M. To meet the procurement quantities requested in the fiscal year 1985 budget, 36 additional aircraft per year will be procured on an annual basis under a variation in quantity clause. In this case, some of the multi-year savings are masked by the savings associated with the increased production rate. When compared against a 216 per year annual buy baseline, the multiyear saving is $227M even though the unit price for the added 36 aircraft is actually less than that for the 180 aircraft included in the multiyear.

SAVINGS ACHIEVED

Senator **Goldwater**. What was the projected savings on the first multi-year contract for the F-16? What savings were actually achieved?

Answer. The savings of $257M was projected for the F-16 multi-year procurement which covered fiscal years 1982-85. These funds were removed from the program and the reduction is reflected in the negotiated contract. The delivery of aircraft on this contract will extend into fiscal year 1987 and the actual savings will be determined by the contractors final performance. Current projections indicate that General Dynamics performance on the four year contract will be within the target price.

PERFORMANCE ADVANTAGES DEMONSTRATED BY F-15

Senator **Goldwater**. General, the Air Force has recently announced its selection of the F-15E as its dual role fighter. The F-15E is a very capable airplane but it is also a very expensive airplane. According to Air Force estimates, the total cost of developing and procuring 400 F-16E's indicates that it costs about $4 billion more to procure the F-15E.

During the flight evaluation program conducted at Edwards Air Force Base over the past year, what significant performance advantages did the F-15 demonstrate to justify its selection?

Were there any particular configurations or payloads in which the F-16E outperformed the F-15E? If so, what were they?

Answer. In the Air-to-Surface role with emphasis on range, payload, and target base coverage, only the F-15E meets the requirement. In the Air-to-Air role, the F-15E is superior in the long range arena, whereas, the F-16E is better in the short range dogfight. On balance, in the Air-to-Air role, both aircraft meet the requirement.

It is the Air Force position that both F-15 and F-16 procurement will be necessary to meet the varied threat through the early 1990 timeframe. Given that procurement of both aircraft will continue and that the DRF is not in addition to the stated procurement numbers, then the relevant costs are those required to add the DRF capability to the basic airframe. These delta costs are approximately $1.5B for the F-15E and $3.2B for the F-16E.

RANGE COMPARISON

Senator **Goldwater**. Given appropriate payloads, how did the range of the F-16E compare with that of the F-15E?

Answer. Given a standard load of 2 GBU-24s (2,000 lb laser guided bombs), LANTIRN pods, 2 AMRAAM, and 2 AIM-9Ls, the combat radius of the F-15E was 27 percent greater than the F-16E for an all low altitude profile, and 63 percent more for an all high altitude profile. Of equal importance is the coverage of target base that each range provides. Using the standard load, the chart below gives a comparison of combat radii and percent of target base coverage for typical profiles flown from probable operating locations. [Deleted.]

LEVELING OF PRODUCTION RATE

Senator **Goldwater**. What will be the impact on the cost of the F-15E if the production rate of the F-15 is leveled at 36 aircraft per year?

Answer. The fiscal year 1985 President's budget as originally submitted projected a maximum F-15 production rate of 96 aircraft per year, 72 of which would have been configured as F-15Es. Production at a rate of only 36 aircraft a year would raise the average unit flyaway cost approximately $5M an airplane. Also, at a rate of 36 aircraft a year, only 224 of the 392 F-15Es could be produced through fiscal year 1992, which was to be the last production year for the F-15E.

Questions Submitted by Senator Edward M. Kennedy, Answers Supplied by the Department of the Air Force

AMRAAM SCHEDULE SLIPPAGE

Senator **Kennedy**. What is the current slippage in the schedule for development of AMRAAM? What is responsible for the delay? To what extent is the delay due to design problems? To manufacturing problems?

Answer. We expect the FSD program completion date to slip approximately 3 months. This was the result of design iterations and task complexity being greater than initially expected. Particularly, the design, fabrication, and integration of the Special Test Equipment (STE) has slowed down program progress. However, there are currently no serious technical problems.

Manufacturing has not contributed significantly to the delay.

HUGHES CONTRACT OPTION

Senator **Kennedy**. The current contract with Hughes requires the Air Force to exercise its option to purchase production models of AMRAAM prior to development or operational testing of the missile. What is the justification for this high degree of concurrency between procurement and testing? What recourse is available to the Air Force if development or operational testing reveals deficiencies after the contract option is exercised?

Answer. AMRAAM program concurrency in procurement decisions and testing is dictated by the early critical operational need for AMRAAM. The F-16 requires a radar missile capability (it currently has none) to meet the growing threat. As a result, the Air Force has structured a program with manageable and acceptable risk which was approved by the Defense Systems Acquisition Review Council (DSARC) in September 1982. While total performance of the missile will not be demonstrated before the early production decisions are made, the Air Force has established critical decision criteria associated with each of the long lead and full go-ahead decisions for Lots I and II. These milestones are intended to ensure that the contractor has made such progress in the missile development that the probability of subsequent change is low. Per the contractual provision, the contractor is required to produce the missile according to the existing government specification. In addition, he is required to correct and retrofit any deficiencies detected during full scale development, production, and up to two years after acceptance and deployment by the Government.

AMRAAM UNIT COST

Senator **Kennedy**. What is the Air Force's current estimate of the unit cost of AMRAAM? How does this compare with the fiscal year 1982 cost estimate that was used as the basis of determining the cost-effectiveness of AMRAAM as compared with the AIM-7M? Has the Air Force updated its cost-effectiveness study to take into account the cost growth? If not, please provide such updated analysis for the record.

Answer. The Air Force's current estimate of AMRAAM unit flyaway cost (reference December 83 SAR) is $225,148 in fiscal year 1982 dollars. The unit flyaway cost used to determine the cost effectiveness of AMRAAM was $173,500 in the fiscal year 1982 study. The 1982 cost effectiveness estimate predates the comprehensive evaluation of program costs prepared for the September 1982 Defense System Acquisition Review Council (DSARC).

The Air Force has not yet updated this cost effectiveness study. We will have new unit costs available after we accomplish an independent cost analysis (ICA) in preparation for the Lot I production decision.

AIR FORCE DOCUMENTS CRITICAL OF AMRAAM CONTRACT

Senator **Kennedy**. The press reports internal Air Force documents which criticize the funding of the AMRAAM contract for failure to link payments to progress. Please comment.

Answer. The current AMRAAM contract contains the standard Defense Acquisition Regulation (DAR) Progress Payment Clause. The existing rules, regulations and contractual provisions dictate that progress payments to the contractor be predicated on contractor's progress and expenditures and not on the basis of how much of his budget he has spent. Recently, the progress payments procedures in use on the AMRAAM contract were reviewed and found to be in compliance with existing regulations and contractual provisions.

ADVANCE BUY REVIEW SCHEDULE

Senator **Kennedy**. Has the Air Force completed its Lot I advance buy review schedule for January 1984? If not, when will the review take place? Will the Air Force brief the committee on completion of that review?

Answer. The Air Force determined at the January 31, 1984 Program Review that we were not ready to make the long lead production decision without additional Air

Force analysis of Hughes' costs and production readiness. The Air Force Systems Acquisition Review Council (AFSARC) principals will discuss the AMRAAM program April 5, 1984. The actual long lead production decision is yet to be determined. We will be pleased to brief the committee at such time as a production decision is made.

AMRAAM CEILING PRICE

Senator **Kennedy**. The ceiling price of the AMRAAM in the full-scale development contract ($553.2 million) is 140 percent of the target cost, 32 percent higher than the target price and more than 25 percent higher than the target price plus award fee and small business incentive. What is the justification for these additional costs? Will the contract meet the ceiling price?

Answer. The Air Force estimate for full scale development (FSD) (finalized in late 1981) as verified by independent cost analysis (ICA), indicated that the FSD contract cost would be at ceiling. Therefore, we ultimately budgeted to the ceiling price or the most likely cost of the contract. Our budget action was appropriate since the Hughes' latest revised estimate (LRE) projects costs to go above ceiling. (An important fact here is that the government's financial liability for FSD is limited to the ceiling price of the contract).

In regard to the award fee and small business incentive, these were placed on contract to give the contractor incentives to meet and exceed the contract requirements and accomplish the government's goals in regard to small business subcontract awards. The intent of the award fee is to ensure short-term performance in specific areas selected by the Air Force as well as functional areas in the long term.

AMRAAM TESTING

Senator **Kennedy**. When will the first testing of AMRAAM occur? What tests are planned? What testing will be completed prior to the full Lot I production decision? What is your response to GAO's contention that demonstration of the missile's performance will not be possible until after the Lot I production decision because all the software will not be available until May 1985?

Answer. We have already completed wind tunnel testing and have begun environmental flight testing (F-16 flutter and loads testing). We will commerce flight testing with the AMRAAM Captive Equipment (ACE-I) (a brassboard missile in an F-15 fuel tank to collect missile performance data) next month. We will also accomplish flight tests with special test vehicles such as the Jettison Test Vehicle, Instrumented Measurement Vehicle, Captive Loads Vehicle, and Separation Test Vehicle/Control Test Vehicle. These will provide us with a wealth of data prior to and during the actual launch program. We will begin the guided missile launch program in Aug. 84.

We do not intend to make the Lot I full production decision until certain criteria, pre-established by the Air Force, are essentially met. Among these are the following testing requirements:

(1) Test, Analyze, and Fix (TAAF) program shows an approximate 200 hour reliability estimate.

(2) Captive Carry Reliability Program (CCRP) completes approximately 200 F-16 flight hours.

(3) Complete F-15/F-16/F/A-18 Instrumented Measurement Vehicle and Captive Load Vehicle flights.

(4) Accomplish two Separation Test Vehicle/Control Test Vehicle launches.

(5) Accomplish six guided test vehicle flights. The information obtained from these items will provide us with considerable information upon which to make the Lot I production decision with a reasonable degree of confidence.

Demonstration of missile performance is an incremental process as we proceed through full scale development (FSD). Associated with this development, the missile software is being developed and utilized in the test program on an incremental basis. There will be a total of five tape builds to get to the ultimate tactical missile software configuration.

Software tape one will be available at the start of the flight test program. The system functional requirements for the tactical weapon are well defined and the framework for all future capabilities will exist in this first tape. As such, we will be able to demonstrate the critical guidance and control, fuze, data, link, built-in test (BIT), and acquisition and track capacitities prior to the Lot I production decision (as currently scheduled).

Since programing the permanent read only memory (PROMs) is a short lead time activity, we anticipate being able to incorporate any changes identified through testing in the first production lot.

STATUS OF FOLLOWER PROGRAM

Senator KENNEDY. What is the status of the follower program to establish a second source for AMRAAM? Could Raytheon's participation be accelerated to provide more competition for the principal contractor?

ANSWER. Raytheon is currently on contract to participate in the full scale development program. As part of this, they are receiving data from Hughes and proceeding with evaluation of the design and production planning activities. Raytheon's efforts are slightly behind schedule (de to minor delays in receipt of data) but not to the point of seriously affecting the ultimate outcome to compete effectively by Lot IV.

The Air Force expects to enter into contracts with Raytheon for coassembly during Lot I, coassembly and coproduction during Lot II, and directed coproduction during Lot III. By Lot IV, Raytheon should be ready to compete fully with Hughes. Recent study by the AMRAAM Joint System Program Office has indicated that Raytheon's participation cannot be effectively accelerated to provide earlier competition to Hughes.

UTILITY OF TWO SYSTEMS

Senator KENNEDY. The GAO study of AMRAAM questioned the utility of two aircraft systems associated with AMRAAM that "may have only marginal usefulness in combat." These are the track-while-scan capability and the IFF system. Under what circumstances does the Air Force believe these will have a significant combat utility? What is the basis for your conclusions?

ANSWER. One finding from the analysis of AMRAAM OUE data and interviews with the participating aircrews was that, "The most important asset in an air-to-air engagement was situational awareness. When you had it you won and when you didn't you lost." The track-while-scan (TWS) radar was a major contributor in gaining situational awareness of enemy formations and maneuvering prior to engagement. Further analysis showed that during within visual range engagements the TWS radar contributed to a higher enemy bomber attrition rate than in those engagements in which friendly fighters were equipped with only a single-target-track (STT) radar. The capability to autonomously identify enemy aircraft would contribute greatly to the effective use of AMRAAM. However, because of fiscal constraints and physical development limitations, the Air Force has not been able to field that capability as rapidly as desired. Cooperative identification capabilities must be banded with non-cooperative methods to give us the capability to engage hostile aircraft beyond visual range. The Air Force believes that both the TWS radar and the emerging cooperative and non-cooperative identification systems coupled with the employment of AMRAAM are valuable combat effectiveness multipliers.

F-15 OUTPERFORMS F-16

Senator KENNEDY. Recurrent Air Force simulations show that, at least under some simulated combat conditions, the F-16 equipped with AMRAAM shows a ratio of blue lost to red killed comparable to that of the F-15 equipped with AMRAAM. Under what circumstances will the F-15 continue to out perform the F-16, when both are equipped with AMRAAM?

ANSWER. At least two Air Force studies have shown under certain combat scenarios (sweep and combat air patrol), the effectiveness of F-15 and F-16 to be approximately equal if

(1) BVR (beyond visual range) identification is assumed to be perfect.
(2) Air-to-Air rules allow BVR missile engagements.
(3) AMRAAM is used on both the F-15 and F-16.
(4) A maximum of eight enemy aircraft were modeled against four F-15s or F-16s.
(5) Neither aircraft was forced to leave the engagement due to range or fuel limits.

AF simulations have not been performed that specifically compare the long range air-to-air capability of the F-15 and the F-16. However, the superior range of the F-15 coupled with its capability to detect, acquire and attack targets at ranges significantly greater than the F-16 make it a more effective asset for the intercept and counterair missions.

The F-15 carries one-third more armament (eight versus six missiles) and has at least 10 percent greater mission range. Additionally, the longer range tracking capability of the F-15 radar helps the pilot gain and maintain situational awareness (SA) of the specific attack problem. Operational and combat experience have shown that the pilot with the best SA is the most effective. When operating cooperatively, the larger search volume provides better and earlier interface with associated command and control systems.

All of the above non-qualified factors combine to make the F-15 the more effective air-to-air fighter.

DUAL ROLE FIGHTER

Senator Kennedy. The Air Force has recently announced its selection of the F-15E to perform the mission of the so-called "dual role" fighter. Please provide a comparison of the total dollar unit costs (including flyaway unit cost) for modifying the F-15 and F-16 respectively as the dual role fighter, and the additional five year costs associated with selection of the F-15 and F-16 respectively?

Answer. The following unit cost estimates were used in reaching the Dual Role Fighter (DRF) decision; however, they may be subject to adjustment as the F-15E contract is negotiated and as detailed cost documentation is provided in support of our forthcoming revised budget request.

UNIT COST COMPARISON

[Fiscal year 1983, in millions of dollars]

	F-15C	F-15E	Delta	F-16C	F-16E	Delta
Flyaway	21.8	23.1	1.3	11.2	14.9	3.7
Procurement	25.5	27.5	2.0	13.3	17.9	4.6
Program	25.5	28.2	2.7	13.3	19.1	5.8

These acquisition costs were factored into life cycle cost and cost effectiveness analyses. It was determined that the F-16E, due primarily to range/payload limits, was unable to adequately satisfy the air-to-surface requirement for the long range interdiction mission. However, even in those areas where the F-16E could operate, analysis showed that the F-15E was more cost effective than the F-16E for the interdiction mission in all theaters.

The forthcoming revised F-15 budget request, reflecting the results of the Alternate Fighter Engine and Dual Role Fighter decisions, will provide the fiscal year 1985-89 cost profile associated with the F-15E selection.

F-15E PURCHASE

Senator Kennedy. The Air Force has said that the selection of the F-15E will not result in an increase in the total number of F-15's that the Air Force requires for its inventory and that the planned purchase of F-15E will be subtracted from the planned purchase of single seat F-15. Does this mean that the Air Force now has a reduced requirement for air-to-air fighters? What is the basis for the Air Force's revised requirement?

Answer. The Air Force's requirement for air-to-air fighters has not changed as a result of the dual role fighter decision. As a baseline, the F-15E maintains the F-15 C/D air-to-air capabilities and will be fully capable in either an air-to-air or interdiction role. This allows the theater commanders the flexibility to use the F-15E in either of these unique roles depending on theater requirements. The Air Force considers the F-15E, as a true Dual Role Fighter, to legitimately fill the air-to-air requirement and at the same time provide a cost effective interdiction capability.

PERFORMANCE CAPABILITIES OF F-15E/F-16E

Senator Kennedy. Please describe and compare the performance capabilities of the F-15E and F-16E in carrying out the dual role-deep interdiction mission. Also, please respond to the concerns expressed in the GAO letter to Secretary Weinberger dated January 19, 1984 concerning the dual role fighter selection, namely, that the Air Force has not "completely defined its operational concepts and requirements" and has not "compared the F-15 and F-16 against a uniform set of criteria to determine if each meets a common set of minimum performance specifications."

ANSWER. As a result of the comparative flight demonstration, the F-15E and F-16E were adjudged satisfactory in the air-to-air role. However, the F-15E, as a result of its superior range/payload capability, was the only candidate which provided an adequate deep interdiction capability.

The DRF Statement of Operational Need (SON) has been reviewed and approved. The SON was submitted by Headquarters, Tactical Air Command on July 5, 1983 and was officially validated on Jan. 5, 1984 by the Requirements Review Group (RRG). The Systems Operational Concept (SOC) for the F-15E was approved by the Air Force on Nov. 18, 1983.

The Air Force conducted extensive flight evaluations and both mission and cost effectiveness analyses to determine the capabilities of the candidate aircraft in performing the long-range interdiction and air-to-air missions. The candidates were evaluated in four key areas: capability, effectiveness, cost (affordability) and risk. These four areas were further expanded to a list of 25 specific evaluation factors. An extract of the DRF evaluation plan is attached to provide these factors.

4.0 ELEMENTS OF THE EVALUATION

4.0.1 ASD, with TAC participation, has been directed to define and evaluate candidate DRFs for both the F-15 and F-16 aircraft. Data sources and tools to perform these tasks include: a comparative flight demonstration, technical analysis, mission analysis, logistics analysis, other tests which have been conducted on either aircraft (such as the current radar test on the F-15, MSIP tests on the F-16, previous flight tests on the F-15) and contractor inputs. The derivative fighter test programs were structured to provide the data base for evaluation of the aircraft and also to facilitate calibration of analytical tools which will be used to define the expected performance of the final configuration of the Dual Role Fighters.

4.0.2 The evaluation will focus on the following areas:

Capability—This includes as a minimum the analysis of test results and predicted performance of the proposed Dual Role Fighter configurations as well as a technical and logistics analysis of the proposed system/program.

Effectiveness—This includes both mission effectiveness and cost effectiveness analysis of the proposed systems.

Cost—This entails a government most probable cost analysis of the proposed DRF systems.

Schedule and Risk—This includes an assessment of the viability of the schedule and inherent program risks in all facets of the proposed program.

4.0.3 When determining relative strengths and/or weaknesses of the two candidate systems during the comparative process, the following definitions will be used:

Relative Strength—One system has an exceptional capability relative to the other candidate which significantly contributes to success of the DRF mission. Capability can be achieved at moderate to low risk.

Relative Weakness—One system has a marginal capability relative to the other candidate in terms of its contribution to DRF mission success. Achievement of an acceptable capability is deemed to be a high risk.

4.1 EVALUATION FACTORS

As a minimum the following factors will be assessed during the DRF evaluation.

1. Combat Range and Payload with Realistic Combat Tasks and Mission Scenarios.
2. Unrefueled Deployment Range.
3. Range/Endurance for Theater Air Defense Mission (with and without 100 NM Supersonic Dash).
4. Air-to-Air Radar Range and Sorting Capabilities.
5. Takeoff/Landing Distance.
6. Acceleration, maneuverability, and Handling Qualities with Air-to-Surface Weapons Load.
7. Acceleration, maneuverability, and Handling with Air-to-Air Weapons Load.
8. Ride Quality.
9. Ability to Carry Air-to-Surface Munitions.
10. Air-to-Surface Weapons Delivery Accuracy.
11. Air-to-Air Weapons Effectiveness Including Look-Down/Shoot-Down Capabilities.
12. Survivability/Vulnerability.
13. Aircraft Structural Integrity.
14. Human Factors/Crew Station.

15. Growth Capability: Avionics Volume and Cooling; Computer memory/hardware/software; and Logistics Trade Studies.
16. Sortie Rate/Turn-Around-Time Capability: Logistics Trade Studies; and Drivers.
17. Supportability: Manpower Requirements; and Supportability Parameters (Reliability, Maintability, Projected Break Rates, Fix Rates, etc.); Drivers and Logistics Support Analysis (LSA).
18. Availability/Supportability: Time Frame; Logistics Trade Studies; and Support Equipment.
19. Deployment/War Readiness Spare Kit (WRSK): Cubage/Weight; and WRSK Drivers/Operational Readiness.
20. Manufacturing Capability and Risk: Industrial Resources; Schedule and Related Factors; Producibility Program Requirements; and Quality System.
21. Comparative Development Costs.
22. Comparative Acquisition Costs Based on Like Quantities.
23. Life Cycle Cost: Logistics Trade Studies; Maintenance Accessibility/concepts; Durability/Operability; and Skill Levels/Manpower.
24. Development Risk—Technical, Schedule, Cost, Supportability.
25. Peacetime Attrition.

4.2 CAPABILITY

4.2.1 Test Results—A summary of test results and their contribution to the overall evaluation will be included.

4.2.2 Performance Analysis.

The performance analysis will provide quantitative estimates of the performance capabilities for the proposed production versions of the candidate aircraft. The operational mission capabilities to be assessed will include air-to-surface and air-to-air missions. The performance analysis work will use consistent data and analysis procedures for each candidate aircraft. The resulting products will provide:

DUAL ROLE SCHEDULE

Senator **Kennedy**. The GAO also found that the dual role schedule could not be met if F-15 production continued at the fiscal year 1984 rate of 36 per year. What rate of production would be required to meet the dual role schedule?

Answer. Our planned procurement schedule for the dual role fighter is:

Fiscal year:	
1986	8
1987	48
1988	60
1989	60
To complete	216

An F-15 production rate of at least 48 in fiscal year 1987 and 60 in fiscal year 1988 and beyond is required to maintain the dual role fighter schedule. This procurement can be supported from F-15 production profiles in the fiscal year 1985 President's budget and the Air Force Tactical Fighter Roadmap.

COST GROWTH

Senator **Kennedy**. The fiscal year 1985 unit cost of the F-16 shows a cost growth of nearly $10 million per fighter or nearly 56 percent. Please explain the reason for this cost growth including an explanation of:

The $1.2 million increase in the cost of the initial spares and the estimated cost in fiscal year 1986 of initial spares and why initial spares costs for fiscal year 1986 are included in the fiscal year 1985 budget.

The nature of the multi-year procurement request for fiscal year 1986 and the justification for this request in accordance with congressionally mandated criteria.

The $1.2 billion increase in peculiar support.

The $485 million total increase attributed to the engine competition and the retionale and projected out-year savings associated with these costs.

Answer. The cost for initial spares, advanced procurement and peculiar support cannot be directly correlated to the aircraft procurement quantities.

The fiscal year 1985 increase in initial spares is driven primarily by procurement of spare engines/modules. The fiscal year 1984 and fiscal year 1985 spares requirements are based on the increase in Primary Authorized Aircraft (PAA) during a 1 year period, lead time away from the respective budget year. The fiscal year 1984 budget ($206 million) supported a PAA increase of 76 aircraft where the fiscal year 1985 budget ($397 million) supports a PAA increase of 175 aircraft. Because advance procurement is not authorized for initial spares and a lead time of approximately 30 months, the fiscal year 1985 budget for spare engines/modules supports the increase in PAA during the last 3 months of the fiscal year 1985 aircraft delivery period and the first 9 months of the fiscal year 1986 aircraft delivery period. The fiscal year 1986 estimate for F-16 initial spares is $350 million.

The next fiscal year 1985 advanced procurement of $325 million includes $288 million to support a second F-16 multiyear procurement and to protect the economic order quantities with a funded termination liability. The follow-on multiyear procurement fiscal 1986-89 meets the congresssional criteria and is supported in detail by the multiyear exhibits provided to the Congress.

The apparent "unit cost" increase in peculiar support is primarily caused by a rephasing of peculiar support during the preparation of the fiscal year 1984 President's budget. This rephasing was accomplished to better, align peculiar support funding with obligations and resulted in the fiscal year 1984 peculiar support budget being artificially low.

The remaining F-16 precurement cost is for the air vehicie and can be correlated to the procurement quantities (unit flyway cost). The fiscal year 1985 unit flyaway cost of $19 million is an increase of $5.7 million compared to fiscal year 1984. This increase is driven by $485 million ($3.2 million per aircraft) programed to protect the engine competition. Based on the results of the competition, this number is being adjusted downward and Congress will be advised when staffing is complete. The savings (over a 20-year life cycle) associated with the engine competition, which included up to 6 years of engine procurements, is estimated to range from $2 to $3 billion.

ATF STATUS

Senator **Kennedy**. What is the current status of the Air Force's ATF? What capabilities is the Air Force seeking in the ATF? Is the Air Force still exploring a STOL (Short-Take-Off and Landing) capability for ATF? What role does the Air Force envision the ATF will play?

Answer. The ATF program is presently in the Concept Development Investigation (CDI) phase. Seven major airframe contractors will provide final CDI reports to the ATF System Program Office on May 1, 1984. The Air Force will select a preferred ATF concept to support the DSARC I Requirements Review scheduled for Nov. 1984. The ATF specified in the Tactical Air Forces (TAF) Statement of Need calls for an air superiority fighter with performance and survivability characteristics which exceed the projected Soviet threat for the mid-1990s and beyond. It is anticipated that the ATF will enjoy substantial improvements in takeoff and landing performance. Preliminary designs from CDI contractors show high aircraft thrust-to-weight ratios and thrust-reversing, two-dimensional nozzles as part of the baseline configuration.

The ATF will be an air superiority aircraft. The TAF is currently developing a Preliminary Systems Operational Concept (PSOC) which will define employment concepts in support of the Requirements Review in Nov.

ATF FUNDING

Senator **Kennedy**. What funding is included in the 1985 budget for ATF?

Answer. The fiscal year 1985 budget request for PE 63230F, Advanced Tactical Fighter Technologies (ATFT) is $94.3M. There are three projects within the ATFT program element. The Advanced Tactical Fighter (AFT) project addresses demonstration/validation of the airframe ($12.7M); the Joint Advanced Fighter Engine (JAFE) project develops ATF engines ($74.6M); and the Critical Technology Demonstration (CTD) project reduces risk on key ATF technologies ($7.0M).

REQUIREMENTS FOR ATF

Senator **Kennedy**. Last year, you stated that you hoped to define a set of requirements for the ATF by summer of 1984. Do you still expect to achieve that target?

Answer. Seven major airframe contractors are participating in the ATF Concept Development Investigation (CDI) phase. Following receipt of the final contractor CDI reports on May 1, 1984, the ATF System Program Office in conjunction with representatives from the Tactical Air Forces will begin an intensive period of analysis and trade studies. They will select the preferred concept prior to a DSARC I milestone Requirements Review scheduled for Nov. 1984. The ATF Statement of

Need (SON) is expected to enter the final validation process during early summer and along with the Preliminary Systems Operational Concept (PSOC) be available to support a DSARC I decision.

CONVENTIONAL MUNITIONS

Senator KENNEDY. There has been considerable internal and external criticism of the Air Force's failure to develop an adequate program for conventional munitions, particularly air-to-ground munitions. Please describe fiscal year 1985 and 5-year plans for augmenting air-to-ground munitions including:

Expected IOC of new munitions; Quantities planned and percentage of requirements filled; Unit costs; and Which platforms will be compatible with each munition.

ANSWER. Requested information is attached in tabular form.

QUANTITIES/PERCENT REQUIREMENT FILLED

Weapon	IOC	Prior Q	Fiscal year 1985	Fiscal year 1985-89	Flyaway cost	Platform compatability
LLLGB	(1)	4,690	3.5K/(2)	48.95K/(2)	$30	A-7/F-4/F-111/F-15/F-16
GBU-15	Nov 83	1,095	600/(2)	2200/(2)	212	F-4/F-111/F-15
IIR Maverick	Apr 85	3,080	4.5K/(2)	48.5K/(2)	92	A-7/A-10/F-4/F-111/F-15/F-16
Harpoon	FY 85	0	85/TBD	85/TBD	474	B-52
HARM	(2)	588	371/(2)	8817/(2)	314	F-4G
Durandal	(1)	1,100	1.9K/(2)	19.7K/(2)	26	F-4/F-111/F-15/F-16
CEM	(1)	1,400	10.4K/(2)	147.8K/(2)	27	A-7/A-10/F-4/F-111/F-15/F-16
Gator	(1)	1,500	4.1K/(2)	47.3K/(2)	50	A-10/F-4/F-111/F-15/F-16
Bigeye	(1)	0	0/(2)	33.8K/(2)	57	A-7/A-10/F-4/F-111/F-16
Imp. 2,000 lb Bomb	TBD	0	300/TBD	TBD	[3] TBD	A-7/F-4/F-111/F-15/F-16
ERAM	TBD	0	0/(2)	TBD	50	A-7/A-10/F-4/F-111/F-15/F-16
SFW	(1)	0	0/(2)	24.5K/(2)	64	A-7/A-10/F-4/F-111/F-15/F-16
AGM-130	LIOC CY 87	0	0/(2)	3325/(2)	TBD	F-4/F-111/F-15/F-16
JTACMS	early 90's	0	TBD	TBD	TBD	B-52/F-15/F-16
BKEP (submunition)	TBD	0	TBD	TBD	TBD	JTACMS/AGM-130/TMD (+ appropriate aircraft)

[1] No IOC has been established by either the Air Staff or HQ TAC.

[2] Deleted.

[3] Final production version estimated to cost slightly less than $5,000 each.

MUNITIONS MISSIONS

Senator KENNEDY. With the cancellation of programs such as WASP and MRASM, what is the Air Force's current planes with respect to the development of long and medium range stand-off air-to-ground missiles? What missions are currently contemplated for the munitions?

ANSWER. Medium and long range standoff requirements will be filled by the boosted GBU-15 (AGM-130) and the Joint Tactical Missile System. This family of standoff weapons will have an approximate range capability of 15MN to 150MN. They will be used for defense suppression and interdicition of high value targets.

MUNITIONS FOR DUAL ROLE FIGHTER

Senator KENNEDY. What munitions does the Air Force intend to employ with the Dual Role Fighter? What modifications to the F-15 will be required to accommodate those munitions?

ANSWER. The F-15E (dual role fighter) will be capable of delivering most current and future conventional and tactical nuclear munitions. Selection of the munitions load for each wartime mission will depend on the target, enemy defenses, weather, etc. However, we plan to use the following as typical F-15E munitions:

Air-to-air.—AIM-120 AMRAAM; AIM-9 sidewinter; and AIM-7 Sparrow.

Air-to--surface

Direct attack weapons.—MK-82 General Purpose Bomb; MK-84 General Purpose Bomb; CBU-58 Cluster Bomb Unit; Tactical Munitions Dispenser (TMD) with associated submunitions; MK-20 Rockeye Cluster Bomb; and Durandal Airfield Attack Weapon.

Standoff weapons.—AGM-65 Maverick; GBU-10 Laser Guided Bomb; GBU-12 Laser Guided Bomb; GBU-15 Electro-Optical (EO) Guided Bomb; GBU-22 Low Level Laser Guided Bomb; GBU-24 Low Level Laser Guided Bomb; Joint Tactical Missile System (JTACMS); and AGM-130 Powered GBU-15 Guided Bomb.

Special weapons.—B-61 Nuclear Bomb.

We will modify wiring and connectors in wing and centerline pylons and change the software in the Programmable Armament Control Set (PACS) and the central computer to accomodate these munitions.

PLATFORMS FOR GBU-15

Senator KENNEDY. What platforms are currently capable of accepting the GBU-15? By 1989, what platforms (and how many) will be capable of accepting the GBU-15 or powered GBU-15?

ANSWER. The F-4E and F-111F aircraft are currently capable of accepting the GBU-15. [Deleted.]

LANTIRN PROGRAM

Senator KENNEDY. What is the status of the Lantirn program? What testing has taken place? What problems has the Air Force encountered with the targeting pod capabilities? Can/should Lantirn be deployed with only the navigation pod?

ANSWER. The Lantirn program has been in full scale development since contract award in September 1980. Flight testing of the navigation pod was begun in July 1983 and of the targeting pod in October 1983. The navigation pod has proceeded successfully through scheduled test milestones and is already demonstrating a capability for low altitude night penetration over unfamiliar and varied terrain.

The targeting pod was returned to contractor facilities for correction of problems identified during testing after the initial seven test flights. The problems occurred primarily in the FLIR imagery, which was affected by induced noise and external vibration, and in the automatic tracker software. These problems have been corrected and the corrections were verified in recent ground tests. We expect to begin flight testing again by late March 1984.

Lantirn can be initially deployed with only the navigation pod. However, without the targeting pod, the Lantirn system does not provide self--contained delivery of laser guided weapons and does not provide the capability to acquire tactical targets at sufficient distance for the pilot to stay beyond range of terminal defenses. Other important features contributed by the targeting pod are the automatic tracking of a target which is not in the direct line of flight of the aircraft and the automatic handoff to Maverick missiles for timely weapon launch.

CLOSE AIR SUPPORT

Senator KENNEDY. With the closing of the A-10 production line, what current or future plans is the Air Force pursuing with respect to close air support? Is there any plan to develop a next generation close air support plane in light of the growing sophistication of Soviet fighters and increasing number of ground forces?

ANSWER. All Tactical Air Force aircraft have the inherent capability to conduct close air support missions. The theater/joint task force commander will apportion his assigned air power, dependent on the weight of effort, to close air support, interdiction, and counterair missions on a daily basis. In the near term, the Air Force is pursuing improvements in communications, munitions, avionics, readiness, and sustainability for all aircraft and in particular within the close air support mission area these improvements will make close air support more effective. The A-10 with a primary mission of close air support will be able to meet the projected threat into the late 1990s. In order to continue to conduct effectively close air support, air superiority over the land battlefield is absolutely essential; thus our most urgent requirement for a new aircraft is the Advanced Tactical Fighter.

PEACETIME OPERATING STOCKS

Senator Kennedy. Under the proposed fiscal year 1985 funding, what level will POS (Peacetime Operating Stocks) achieve? How does this compare with last year in funding and percent filled?

Answer. The fiscal year 1985 POS request of $3,870.3M achieves 100 percent funded level. The fiscal year 1985 approved POS funding of $2890.5M resulted in a 79 percent funding level.

WRSK/BLSS

Senator Kennedy. What level of WRSK/BLSS and other war resource material will be achieved under fiscal year 1985 funding?

Answer. The fiscal year 1985 request of $615.4M funds WRSK/BLSS to a 41 percent level. Kits will be procured for units with validated wartime taskings which include B-52, C-5, C-130, F-15 and F-16 aircraft. The Other War Reserve Materiel (OWRM) spares request of $5.0M will be used to maintain the C-5A fleet at sustained ability objective. Overall, OWRM is funded at a .4 percent level.

SYSTEMS COST GROWTH

Senator Kennedy. In a recent report, CBO identified a number of weapon systems that experienced significant procurement unit cost growth between January 1983 and February 1984. Included in these were such Air Force systems as the TR-1 reconnaissance aircraft (56 percent growth; yielding a $196 million increase in the fiscal year 1985 budget); T-46 (52 percent cost growth); AMRAAM (23 percent cost growth); and the F-15 (19 percent cost growth; yielding $310 million increase in the fiscal year 1985 Budget). For each of these systems, please provide an explanation for the high 1 year cost growth in unit procurement cost. Each of these systems experienced a reduction in the planned quantity to be purchased. To what extent are the increased costs attributable to decreased order quantities?

Answer. *TR-1*—The TR-1 unit cost increase reflected in the fiscal year 1985 column of the February 1984 President's Budget over that reflected in the fiscal year 1985 column of the January 1983 President's budget was caused by a realignment of funding to support procurement of mission support sensors deferred from fiscal year 1984.

The January 1983 Budget Request of $214.8 million for fiscal year 1984 contained $96.6 million in funding for mission support sensors. A $42.4 million congressional reduction in fiscal year 1984 forced deferral of much of the sensor procurement to fiscal year 1985. This deferral to fiscal year 1985 caused a "spike" in sensor procurement in fiscal year 1985 from the Janaury 1983 to February 1984 Budgets of $83.6 million. The increase in sensors plus a decrease in the fiscal year 1985 aircraft quantity from 5 to 4 caused a TR-1 unit cost increase in fiscal year 1985 from $35.9 million to $52.7 million (47 percent increase).

It should be noted that the fiscal year 1985 aircraft unit flyaway cost actually decreased between the January 1983 and February 1984 Budgets. In January 1983, the unit flyaway cost for 5 aircraft was projected to be $25.560 million. In February 1984, the unit flyaway cost for 4 aircraft was estimated to be $21.2 million (21 percent decrease).

Total procurement funding for fiscal year 1985 between the January 1983 and February 1984 President's Budget increased by $39.9 million.

AMRAAM—The AMRAAM unit cost increase reflected in the fiscal year 1985 column of the February 1984 President's budget over that reflected in the fiscal year 1985 column of the January 1983 President's budget was caused by a congressional reduction of fiscal year 1984 advance procurement funding. This action forced a reduction in the fiscal year 1985 quantity from 224 to 174 and a commensurate reduction in funding from $427.4 million to $413.0 million. As a result, the fiscal year 1985 unit cost increased from $1.769 million to $2.170 million (23 percent increase).

T-46—The T-46 unit cost increase reflected in the fiscal year 1985 column of the February 1984 President's budget over that reflected in the fiscal year 1985 column of the January 1983 President's budget was caused by a realignment of production to a more gradual build rate. This resulted in a reduction in fiscal year 1985 of 11 aircraft and $56.9 million and caused a unit cost increase from $7.433 million to $10.720 million (44 percent increase). Since more than a third of the fiscal year 1985 is for nonrecurring and peculiar support, the fiscal year 1985 recurring unit flyaway cost actually increased 24 percent.

F-15—The fiscal year 1985 column of the fiscal year 1984 President's budget reflected a unit cost of $34.7 million for 72 aircraft. The fiscal year 1985 Budget reduced this quantity to 48 aircraft at an average unit cost of $41.2 million (19 percent increase). The unit cost increase was caused by the following factors:

(a) Loss of projected savings from congressional disapproval of multiyear procurement—20 percent

(b) Loss of efficiency in production rate decrease —40 percent

(c) Less than proportionate reductions in time-phased peculiar support—40 percent

Total procurement funding for fiscal year 1985 between the January 1983 and February 1984 President's budget actually decreased by $816.7 million.

WAR FIGHTING DOCTRINE

Senator KENNEDY. There has been some discussion recently concerning the Soviet's development and deployment of elite, fast striking operational maneuver groups, designed to penetrate deeply through NATO forces during the early days of a European war. Has the Air Force examined its war-fighting doctrine in light of the development of OMG's? What implications does this development have for the Air Force's current emphasis on second echelon attack?

ANSWER. Yes, the Air Force has examined the implications of Operational Maneuver Groups (OMGs) on current war-fighting doctrine. Soviet doctrine allows them to employ their forces echeloned in depth, with most of their forces on line, or with an Operational Maneuver Group (OMG). The actual deployment in wartime will depend upon terrain, enemy forces and other factors. Due to the flexible nature of our current weapon systems and our employment of them, the Air Force can respond regardless of whether a Soviet, or Soviet-style, ground offensive employs echelonment in depth, OMGs or some combination of the two. We are prepared to conduct Air Interdiction to delay, divert, disrupt and destroy enemy ground forces. At the same time, we can shift the focus of our efforts to a breakthrough by an OMG. The centralized control and decentralized execution of air operations makes airpower responsive to the needs of the ground commander and makes such a shift possible. The emphasis Air Force doctrine places on developing a force with these characteristics insures the Air Component Commander will possess the best instrument for helping defeat any type of Soviet ground offensive.

IFF SYSTEMS

Senator KENNEDY. What progress has been made in trying to assure interoperability of IFF (Identification Friend or Foe) systems among NATO countries. Does the absence of a reliable IFF system undercut the utility of long-range and beyond visual range air-to-air munitions, such as AMRAAM?

ANSWER. Substantial progress has been made toward achieving NATO interoperability for IFF systems. The NATO Identification System (NIS) consists of two separate systems to achieve this interoperability. The Indirect Subsystem (ISS), which will use the in-place command and control system in Europe with new sensors and processing to identify friends, enemies, and neutrals, and disseminate the information, is currently in development for a European demonstration in fiscal year 1985. The architecture for the indirect system has been agreed to by NATO. When the demonstration concludes, the NATO Standardization Agreement (STANAG) will be ratified.

The direct portion of the NIS, the Mark XV IFF, has also made substantial progress. The US, UK, and France have agreed to the U.S. compromise approach on the operating frequency band and the USAF is participating in a German study of frequency compatibility to win their agreement. All four countries are building brassboard models using the U.S. preferred D band (formerly called L band) operating frequency for evaluation.

The current state of identification techniques does not undercut the utility of beyond visual range (BVR) missiles such as AMRAAM. The utility of BVR missiles is not dependent upon a standardized NATO system, although an improved IFF capability would enhance employment options, flexibility, and operational effectiveness. Therefore, we are pursuing, as a matter of high priority, a comprehensive program to improve our identification capability. The approach combines complementary, present day identification procedures/techniques, and equipment to maximize our current capabilities and to serve as a basis to evolve near and far term identification improvements.

WITHSTANDING ATTACK

Senator **KENNEDY**. In testimony before the House Armed Services Committee, General Rogers testified that shortcomings in conventional forces will force a heavy and early reliance on nuclear weapons to respond to a Soviet attack. What is the Air Force's current estimate of our capability to withstand an attack in Europe without recourse to tactical or strategic nuclear weapons?

ANSWER. NATO doctrine and strategy, to which the United States subscribes, relies on escalation to nuclear weapons if necessary to stop a Warsaw Pact attack on NATO with minimum loss of territory. Together with other services, the Air Force trains, equips, and will sustain our forces to do so as required. However, we feel that as programed improvements in our Air Forces are achieved, as we exploit emerging technologies for our future weapons systems, and as we perfect with the Army emerging maneuver warfare doctrine, we will, with our Allies, enhance our ability to stop a Warsaw Pact attack without early recourse to nuclear weapons. Crucial to our capability to do so, however, is the continued availability of funding over the program period to improve our forces.

AIR FORCE PRIORITIES

Senator **KENNEDY**. Your report, fiscal year 1985 budget estimates, p. 3, identifies Air Force priorities in the following order:

People; Modernization of strategic forces; Build combat readiness and sustainability; Enhance force projection; and Modernize and expand our theater forces.

Tactical forces thus ranks at the bottom of the Air Force's priorities. Since cuts will inevitably come, is it your personal opinion that they should come at the expense of programs such as F-15 procurement? Dual role fighter? AMRAAM? Which program?

ANSWER. The basic objective of the Air Force is to help preserve the United States as a free Nation, with its fundamental institutions and values intact. To accomplish this objective, we submitted a budget designed to address our most pressing military deficiencies in the priorities as stated. The requested funding behind these priorities represents a balanced approach toward our meeting our objectives. If non-programmatic funding reductions are directed, then the Air Force will have to evaluate where these reductions can be applied and what the impact would be toward meeting our stated objectives. The dramatic improvement made in theater warfare capability by our potential adversaries require us to continue our efforts to upgrade our tactical forces within the balanced approach represented in the budget submission.

FUEL TANKS

Senator **KENNEDY**. What percent of requirements for F-16 external fuel tanks is currently on hand? What is the Air Force's plan for assuring an adequate supply of fuel tanks?

ANSWER. Current stocks of F-16 300 gallon external tanks meet [deleted] of the projected [deleted] wartime consumption for current forces. Stocks of 370 gallon tanks and associated pylons meet the [deleted] requirements for current forces. Projected outyear stockpiles based on tank and aircraft procurements will provide a [deleted] capability for 300 and 370 gallon tanks when the fiscal year 1988 buys are delivered. The [deleted] stocklevel represents [deleted] of the overall requirement and is the near-term procurement objective as defined by the Defense Guidance.

STRATEGIC DEFENSE/AIR DEFENSE

Senator **KENNEDY**. In the Air Force's fiscal year 1985 budget estimates (p. 29), you indicate that F-16s equipped with AMRAAM, will be given to the National Guard for "strategic defense". How does the "strategic defense" mission differ from the F-15s assigned "air defense" role? What capabilities made the F-16 suitable for strategic defense but not air defense?

ANSWER. The term "strategic defense" encompasses three subordinate mission areas, one of which is atmospheric or "air" defense. Often in narratives such as referenced above, the two terms are used interchangeably. However, the ANG F-16s will perform the air defense mission in concert with the F-15s.

Questions Submitted by Senator Carl Levin, Answers Supplied by the Department of the Air Force

USE OF AFRES AND ANG

Senator Levin. Congress has urged DOD and Air Force to make greater use of Air Force Reserve (AFRES) and Air National Guard (ANG) components in tactical aviation. If the projected growth in the AF force structure occurred in reserve/Guard units—with 24 active/16 AFRES/ANG vice the present 36-wing mix of 24 active/12 AFRES/ANG—how would such a force mix affect budget costs, esp. in O&M where the reserves/Guard are cheaper, overseas commitments and forward deployments, combat proficiency and readiness, and equipment requirements?

Answer. Currently, the Active/Reserve Force mix in the President's budget shows approximately 33 percent of the fighter force in the Reserve units. As the chart below shows, this percent remains constant throughout the force growth to the proposed 40 Tactical Fighter Wings.

Fiscal year	PAA [1] active	PAA air reserve forces	Percent of total PAA
1985	1,782	864	33
1989	1,954	942	33

[1] PAA (Primary Aircraft Authorized.)

This force growth is carefully planned to provide the most capable force to meet national objectives at the lowest possible cost. The Reserve Forces, built upon a structure using part-time personnel, generally fly and train at lower activity rates than do comparable Active Force units. If the Reserve Forces were tasked to train at the same levels as the Active units, there would be comparable dollar costs.

The Air Force has examined the constraints associated with the Force mix ratio in great detail. The requirements to maintain overseas commitments, deployments, and a training base which provides experienced personnel for the Reserve forces are just some of the elements in the Force mix equation. The flexibility to meet contingency requirements without national mobilization is another important ingredient in the Active/Reserve Force balance.

Future plans to expand to 40 Tactical Fighter Wings will include reserve participation in appropriate balance to meet national objectives. Modernization has been and will continue to be a key element in meeting our goals.

CONDUCTING FORMAL STUDY

Senator Levin. Has the AF done a formal study analyzing these costs and benefits of an expanded force structure relying more heavily on the AFRES/Guard? If not, why not?

Answer. The Air Force has studied and continues to formally study Active/Reserve force mix options. The DOD has also contracted independent agencies to look at the Force mix decision process. From these studies, there is a consensus that the decision process resident in the Planning Programing and Budgeting System affords ample opportunity to provide for a reasoned approach to force mix issues.

Cost studies have been made on the marginal dollar impact of transferring forces from active to reserve units. However, cost analysis is only one factor to consider when making these decisions. Other factors, such as mobilization requirements, forward deployment requirements, daily alert and commitments, and manpower efficiency are studies in each force mix decision. These factors are dynamic and will have differing relative priorities within the force areas: strategic, tactical, airlift, training, support, etc. The intent of these force area studies is to insure the Air Force continues to employ the reserve forces in the most effective manner without reducing military capability.

E-3A AWACS BUY

Senator Levin. Last year, Air Force projected it would buy 3 E-3A AWACS aircraft in fiscal year 1985. This year, it is requesting no new AWACS. Considering past Air Force testimony that these AWACS were needed for air defense of United States, and how important that mission is, how can the Air Force justify not seeking additional AWACS procurement in fiscal year 1985?

Answer. The Air Force position on the importance of AWACS for defense of the United States has not changed. Procurement of additional AWACS was one of several initiatives announced in President Reagan's Strategic Modernization program on October 2, 1981 to enhance our Nation's security. Funding all of these programs at the desired levels each year is not always possible within the Air Force allotted TOA. The fiscal year 1984 long lead money ($76.2M) will allow the Air Force to revisit AWACS procurement during the formulation of the fiscal year 1986 President budget.

INCREASE AMRAAM PURCHASE

Senator Levin. The Advanced Medium Range Air-to-Air Missile (AMRAAM) is intended to give the F-16 the capability to attack targets beyond visual range. AMRAAM is scheduled for deployment aboard some F-16s in about two years, although it is not clear whether the F-16s to be deployed with the U.S. air defense forces will receive AMRAAM until later.

If air defense is such an important mission, why shouldn't we increase the purchase of AMRAAM in fiscal year 1985 and later years to accelerate the deployment of these missiles to F-16s dedicated to air defense of the United States?

Answer. F-16s deployed with the US air defense forces will receive AMRAAM and the present AMRAAM procurement schedule is coordinated with the U.S. air defense ANG F-16 modernization program. Fiscal year 1985 AMRAAM procurement will equip designated European F-16 squadrons in the late fiscal year 1986 timeframe. Since the air defense F-16 conversion doesn't begin until fiscal year 1987, programed fiscal year 1986 AMRAAM procurement will be timely and sufficient to equip F-16s assigned to U.S. air defense forces.

AMRAAM COST

Senator Levin. How much would it cost to buy enough AMRAAMs in fiscal year 1985 to accelerate their deployment with air defense F-16s at the same time they are deployed to other F-16s? How much additional funding would be needed in fiscal year 1985 to permit the conversion of enough aircraft to support this earlier deployment?

Answer. Due to a complex variety of events whose outcome are yet to be determined, it is unlikely that the original F-16 AMRAAM initial operational capability (IOC) date (Oct 86) can be met. Consequently, we could not further accelerate the AMRAAM program for earlier deployment of the air defense F-16s. Without being able to speed up missile deliveries, there is no point in converting F-16s any earlier than scheduled; hence, no additional fiscal year 1985 funding would be required for the F-16 or missile effort.

EVALUATION PLAN

Senator Levin. The AF has just selected the F-15E over the F-16E for its new "dual role" deep interdiction aircraft to attack targets deep behind enemy lines. AF intends to buy 400 of these aircraft to augment F-111 aircraft in the inventory now and to replace aging F-4s.

Did the AF establish a specific "evaluation plan" with detailed criteria which it used to compare the F-15E with the F-16E to make its choice. If so, provide a copy to the committee.

Answer. The Dual Role Fighter (DRF) was evaluated in four key areas: capability, effectiveness, cost (affordability) and risk. These four areas were further expanded to a list of 25 specific evaluation factors. An extract of the DRF evaluation plan is attached to provide these factors. [See extract provided to question submitted by Senator Kennedy, pp. 1751-1752.]

COMPARISON OF F-15E AND F-16E

Senator Levin. The F-15 is much more expensive than the F-16 in procurement and operating costs. Please compare the F-15E and the F-16E for the subcommittee, using the same terms of reference and based upon the threat scenarios most likely to arrive during the late 1980's in regard to: (1) operating radius, radar and weapon ranges, effective delivery of weapons, speed, survivability/vulnerability, and reliability/maintainability in various mission scenarios; (2) estimated costs of development, production and operation; and (3) projected dates of development, procurement and initial operating capability.

Answer. The attached charts provide a representative indication of F-15E vs F-16E capabilities in three theaters of consideration (Central Europe, Southwest Asia and Soviet Pacific).

The F-15E cost estimates below were used in reaching the Dual Role Fighter (DRF) decision, and may be subject to minor adjustment as the F-15 contract is negotiated and as detailed cost documentation is provided in support of our forthcoming revised budget request.

DRF COST SUMMARY

[Fiscal year 1983, in millions]

	F-15E	F-16E
RDT&E	$258	$461
Production [1]	791	1,814
Acquisition total	1,049	2,275
Annual O + S costs [2]	66.2	50.5

[1] These costs are delta costs associated with 392 "E" models and do not include the basic C/D airframe costs programmed in the F-15 or F-16 program elements.

[2] Projected steady state O + S cost for a 24 aircraft squadron

These costs were factored into life cycle cost and cost effectiveness analyses. The results showed that both the F-15E and F-16E were considered satisfactory for the air-to-air mission. However, only the F-15E adequately met the air-to-ground requirement. The F-16E, due primarily to range/payload limits, was unable to adequately satisfy the air-to-surface requirement for the long range interdiction mission. Additionally, even in the shorter interdiction mission where the F-16E was able to reach the target, analysis showed that the F-15E was more cost effective than the F-16E in all theaters.

The F-15E development contract award is imminent. Procurement Planning provides for the initial buy in fiscal year 1986 to meet a second quarter, fiscal year 1989 Initial Operating Capability. A total buy of 392 aircraft is programed. [Deleted.]

FLIGHT TESTS RESULTS

Senator **Levin**. Flight tests of both aircraft were conducted. Compare the results with the AF's expectations, and where expectations were not met, explain why and how it affects the candidate aircraft's ability to meet the dual role fighter requirements.

Answer. The F-15 flight test results met or exceeded Air Force expectations. These results were due to the many inherent capabilities possessed by the F-15 and the introduction of the tangential carriage option for carrying stores. This carriage method, involving placement of multiple weapons stations tangent to the curvature of the conformal fuel tanks, significantly reduced store drag and extended range/payload capability.

The F-16 candidate, on the other hand, performed generally as expected during the 1982-83 flight test of the prototype aircraft. However, the General Dynamics technical proposal, submitted in December 1983, reflected a somewhat heavier empty gross weight than previously projected. Additionally, the F-16E range/payload capability, although a significant improvement over the F-16C, was exceeded by the F-15E in all theaters.

In summary, both aircraft satisfy the air-to-air requirement. However, as a result of the differences explained above, only the F-15E adequately satisfies the air-to-ground requirement.

NEW COST ESTIMATE

Senator **Levin** The AF prepared cost estimates for the F-15E and F-16E in August 1982. A new cost estimate was prepared late last year. Since program changes (production rates, schedule and configuration of aircraft) outdated the 1982 estimates, provide the new estimate and explain any differences.

Answer. The necessary revisions to the fiscal year 1985 President's budget are being coordinated through Air Force and OSD channels at the present time and will be submitted later this month. The F-15 request will include the F-15E dual role fighter (DRF).

Pending release of this budget revision, we can only provide the cost estimates which were used in reaching the DRF decision, recognizing that they may be subject to minor adjustment as the F-15 contract is negotiated and as detailed cost documentation is provided in support of our forthcoming revised budget request.

DRF COST SUMMARY

[Fiscal year 1983, in millions]

	F-15E	F-16E
RDT&E	$258	$461
Production	791	1814
Total	1,049	2,275

Note.—Costs are delta costs associated with 392 "E" models and do not include the basic C/D airframe costs programed in the F-15 or F-16 program elements.

These cost estimates reflect minor configuration changes and production rate effects, and they are based on actual contractor cost and technical proposals whereas the August 1982 estimates were not.

F-15E PROGRAM FUNDING PROFILE

Senator **Levin**. Provide a funding profile for the F-15E program, along with a projection of how many aircraft of what types, and at what costs, the AF intends to procure between now and 1990 to modernize and maintain its forces.

Answer. Revisions to the fiscal year 1985 President's budget are being coordinated through Air Force and OSD channels at the present time and will be submitted later this month. The revised request will reflect the impact of the alternate fighter engine and dual role fighter decisions, as well as incorporating our plans for modernizing and maintaining the Tactical Air Force into the 1990s—commonly known as the tactical fighter roadmap.

OA-37 OBSERVATION/ATTACK JETS

Senator **Levin**. There have been reports that the Air Guard might lose its OA-37 observation/attack jets to foreign military sales. I understand the AF has opposed this to the State Department. What is the status of these considerations?

Answer. There are no current plans to deactivate or convert any of the Air National Guard OA-37 units.

FOREIGN MILITARY SALES OF OA-37

Senator **Levin**. What are the military implications of this reduction in the already reduced forward air controls capabilities of the Air Force? Has the Army, which relies on FAC in support of ground operations taken a position on these possible sales?

Answer. The sale of these aircraft in the quantities anticipated will not have a significant impact on the level of support provided to the U.S. Army. The Air Force will continue to operate adequate numbers of forward air control aircraft; O-2, OA-37, and OV-10 to perform the airborne forward air control mission. We will have some 10 airframes per Army division, which we have determined are adquate to provide close air support direction. We anticipate this support to continue into the foreseeable future.—The Army's requirement is for the Air Force to provide the number of forward air controllers necessary to meet Army requirements for close air support. As long as we meet this requirement, which we now do, we do not expect the Army to take a position on the foreign military sales.

REPLACEMENT OF SOLD OA-37'S

Senator **Levin**. If these aircraft are sold overseas, how does the AF intend to replace them with the units which now operate them? Will another aircraft be assigned to these units for this mission and when?

Answer. If OA-37 aircraft are sold overseas, the Air Force will program replacement aircraft for the affected Air National Guard units. Normal Program Objectives Memorandum (POM) development would result in replacement aircraft being programed against any expected or foreseen foreign military sales. However, in those cases when additional replacement aircraft are not available, a unit conversion would be programed when the possessed unit inventory is inadequate to accomplish unit tasking.

REPLACEMENT OF SOLD OA-37'S

Senator LEVIN. If the Air Force has no plans to replace these aircraft how does it intend to provide the necessary forward air control capabilities?

ANSWER. The loss of these aircraft will not decrease our ability to provide forward air control capabilities. Following present planned sales, remaining aircraft, 10 per Army division, will adequately cover close air support operations. The Air Force/ANG will have to increase utilization rates on remaining aircraft to cover flying training requirements.

REPLACEMENT AIRCRAFT FOR GUARD

Senator LEVIN. Will you cooperate fully with State Guard units to locate replacement aircraft quickly to avoid losing trained pilots and other skilled personnel?

ANSWER. The Air Force considers the Air Reserve Forces full partners and cooperates fully to increase the reserve components contribution to Total Force capabilities. The Air Force coordinates closely with the National Guard Bureau in programming equipment for Air National Guard units.

87TH FIGHTER INTERCEPTOR SQUADRON

Senator LEVIN. The AF promised the 87th Fighter Interceptor Squadron at K.I. Sawyer AFB in Michigan would remain operational through all of fiscal year 1985. Yet there have been reports that the AF already is transferring personnel out of the 87th FIS in conjunction with its deactivation eventually. Can you assure me this is not the case?

ANSWER. As directed by the Secretary of the Air Force, the Air Force plans to keep the 87th FIS in an active status at K.I. Sawyer AFB through fiscal year 1985. As such, personnel assignments for the 87th FIS are currently being handled on a routine basis as with any other Air Force unit.

VEHICLE SHORTAGE

Senator LEVIN. Major General Hensen, you have testified that the Air Force is short some 23,000 vehicles and that of its total fleet, nearly 36,484 need to be replaced based on deterioration, age and obsolescence. You say this is why the fiscal year 1985 budget seeks 35 percent real growth in these accounts.

Under the program established in the fiscal year 1985-89 defense plan, will the Air Force ever be able to procure its required number of vehicles? Will it ever be able to replace enough vehicles fast enough to reduce the percent of the fleet which needs to be replaced due to deterioration, age and obsolescence? Why is the date of achieving the required number so late?

ANSWER. Yes, the fiscal year 1985-89 defense plan fills all vehicle shortages and eliminates the replacement backlog. The buy out program is a fiscally prudent, time phased program designed to fill shortages and achieve an orderly replacement requirement in future years. We would not, for example, want to buy out the entire requirement in fiscal year 1985 because doing so would require a similarly large replacement expenditure in a future year rather than an economical, orderly, annual procurement.

VEHICLE REPLACEMENT

Senator LEVIN. How much would be needed to be added to the Air Force budget in 1985 to accelerate the replacement process by one year, and in which accounts?

ANSWER. $156M would have to be added to the fiscal year 1985 budget to accelerate the replacement program one year. Nearly every P-1 line item account within the Vehicular Equipment program would be increased.

VEHICLE REPLACEMENT BY 5 PERCENT ANNUALLY

Senator LEVIN. How much would need to be added to the fiscal year 1985 budget, and in which accounts, to reduce by 5 percent annually the number of overage, deteriorating, obsolete vehicles?

ANSWER. The fiscal year 1985 program would have to be increased $22 million to reduce the number of overage, deteriorating, obsolete vehicles by an additional 5 percent.

VEHICLES BOUGHT FROM FOREIGN MANUFACTURERS

Senator **Levin**. Except for the small number of administrative use vehicles the United States agreed to buy in England, West Germany and Italy in 1978, does this budget contain any funds for any service to buy any types of vehicles from foreign manufacturers? If so, how many, at what cost and why?

Answer. I cannot address the other services funding. The only other funds contained in the Air Force vehicle budget for foreign manufactured vehicles are $173 thousand. These funds are contained in P-1 Line No. 121 and will procure two armored sedans in Germany for anti-terrorist protection.

AUV FLEET

Senator **Levin**. After the initial purchase of the AUVs (agreed to in 1978) is complete, do the services or DOD intend to continue to buy more foreign vehicles in West Germany, Italy and England, either to expand or maintain its AUV fleet?

Answer. Again, I cannot address the other services funding plans. However, the Air Force does intend to continue its European Vehicle Buy program in these countries. Vehicles will be procured to replace wearouts and to fill any new requirements which may be created by new missions.

EXPAND PURCHASE OF AUV'S

Senator **Levin**. Does DOD or the services intend to expand the purchase of AUVs to other nations where the U.S. stations troops?

Answer. I am uncertain as to the other Services' plans; however, the Air Force is considering cost effective procurement of selected administrative use vehicles in Japan. More responsive warrantly repairs, spare parts support and delivery of right hand drive vehicles are some of the benefits to be gained from host country procurement. We anticipate the program would involve small quantities that would be competitively procured.

VEHICLES COVERED BY WARRANTIES

Senator **Levin**. When the Air Force or DOD and other services buy vehicles as your have outlined in your statement, General Hansen, how many of them are covered by warranties, and under what terms and conditions?

Answer. The Air Force requires commerical vehicle producers to provide the same warranty that they provide to their commercial customers. In general, this warrantly is for 12 to 15 months or 12,000 miles. However, if a producer offers a longer warranty to their commercial customers, they are required to provide the Air Force the longer warranty. For vehicles at CONUS locations, the warranty usually covers both parts and labor. In overseas locations only parts are warranted due to a lack of a dealer network to do the servicing. When the Air Force buys a specialized vehicle such as the P-19 crash/fire truck, which does not have a direct commercial counterpart, usually a 100 percent warranty on materials and workmanship for 12 months from date of delivery is required.

WILD WEASEL AIRCRAFT CONTRACT

Senator **Levin**. In March, 1977, DOD directed Air Force to upgrade the avionics/weapons delivery system of the F-4G Wild Weasel defense suppression aircraft. The Air Force decided in 1979 to procure the ARN-101 system. In 1981, DOD informed the Senate that a contract would be awarded by the end of July 1981.

Just last week, that contract finally was awarded for the first increment of Wild Weasel aircraft to be upgraded—some 7 years after the initial decision and almost three years after DOD said a contract would be awarded. Even considering the delays between 1977 and 1981, there can be no excuse for the delays between 1981 and last week.

Would you agree that the delays in this program were excessive? Why did it take so long to get on contract for an off-the-shelf system?

Answer. The 38 months since the July 1981 contract award should not be viewed a period of delay. The July contract provided for the integration and testing of the AN/APR-38 Electronic Defense Suppression System and the ARN-101 integrated Avionics Upgrade System. While both systems, at that time, were off-the-shelf, neither one been designed with the other in mind. Therefore, the integration of the ARN-101 system with the existing F-4G aircraft avionics, the introduction of a thinner gauge wire (to accommodate space constraints) and the installation of the AN/APR-38 system had to be developed and flight tested. Because of the complexity of the modification, several viable integration approaches had to be evaluated to insure the totally integrated system would function as an entity on the F-4G aircraft.

In July 1981, a firm fixed price development contract was awarded to install and integrate the ARN-101 into the AN/APR-38 equippped F-4G aircraft. The prodcution authorization was based upon the successful integration and flight testing of the F-4G with both systems installed. A combined qualification test and evaluation/qualification operational test and evaluation was begun in September 1983 and completed in December 1983. Analysis of the test data resulted in the F-4 system program manager's decision to authorize production. A production integration contract was awarded in March 1984. Installations are scheduled to begin in April 1985.

In view of the complexity of the systems involved in this modification, the time take to orchestrate these avionics systems integration activities is not considered to be excessive.

DIGITAL AVIONICS SYSTEM

Senator **Levin**. Last year, this committee added $16M to the budget so the Air Force could buy the ARN-101 system and upgrade the 40 RF-4C aircraft in the ANG which are dedicated to the Rapid Deployment Force. Despite that direction, the AF has issued a directive to competitively procure a digital avionics system for these aircraft.

In view of the delays to get the off-the-shelf ARN-101 on contract for the F-4G, how long will be required to get under contract for the competitively procured system for the RF-4Cs?

Answer. The procurement strategy proposed by the Senate Armed Services Committee was not supported through the legislative process. The proposal by the Senate Appropriations Committee "to conduct a formal competition using life cycle costs as a major criterion, to select a replacement" was supported by the Senate House Conference Committee that concluded their deliberations in November 1983. The Air Force procurement actions that have been initiated were based on the direction from the conference committee. These actions are in consonance with the wishes of the Congress in seeking to obtain the best value for the taxpayer's dollar, while providing industry with the opportunity to compete for defense contracts. This also is in keeping with direction given by the Defense Acquisition Regulation (DAR). Based on the above, it is the Air Force's intention to be under contract in fiscal year 1984 or as soon thereafter as is possible.

CONTRACT DELAY

Senator **Levin**. Last year, I was informed by the AF that conducting a competition and letting a contract for the RF-4C digital avionics system upgrade would take no more than 6-9 months. Can you assure me the AF intends to accomplish this schedule without delay?

Answer. The Air Force is making every effort to meet the schedule it proposed previously. The original intention remains unchanged.

PROCUREMENT PLAN AND MILESTONE CHART FOR RF-4C UPGRADE

Senator **Levin**. Funds for the RF-4C upgrade have been available for 3 months and the AF still does not have a procurement plan and a program milestone chart for this work. How do you intend to complete the contract process within 6-9 months?

Answer. Direction was provided to Air Force Logistics Command to proceed with those actions necessary to upgrade the avionics system on the ANG's RDF RD-4C aircraft. A procurement plan has been developed, appropriate milestones established and planning to change the RF-4C configuration has been initiated. These necessary and mandatory preprocurement actions will form the basis for our procurement of RF-4C modification kits. Six to nine months after this planning process is completed, we intend to be on contract.

RING LASER GYRO INERTIAL NAVIGATION SYSTEM

Senator **Levin**. According to information we have received, the AF is considering changes to the specifications of the digital avionics package to incorporate a ring laser gyro inertial navigation system as part of the improvements package. This could further delay the program. Why not issue the specs for the currently available spinning mass gyro and permit a backfit of the ring laser gyro when it is available in about three years? Don't you risk further delays otherwise?

Answer. The Air Force instituted a Form Fit and Function (F^3) INU specification to be considered as potential vendor and source of supply for Standard Inertial Navigation Units. The choice of vendor(s) is determined through a competitive selection process.

The F^3 (ENAC 77-1) specification is a performance, not a design specification. Therefore, any F^3 qualified vendor's INU will satisfy the inertial navigation system requirements. By revising the specification to allow an F^3 INU to provide for the navigation function, the Air Force obviates the possibility that it will be forced into a sole source procurement position and therefore promotes competition.

The F^3 specification is technology transparent, that is, it is not sensitive to the INU design (spinning mass, ring laser, etc.) Therefore, the Air Force can use any F^3 qualified components to satisfy its inertial requirements.

F^3 INUs are available today and are planned for installation in the C-130, F/FB-111, F-16C/D, HH-60D, C-17 and A-10. By using the F^3 approach, the Air Force insures the availability of components to satisfy RF-4 requirements now and in the outyears. Delays due to F^3 INU availability have neither been experienced nor are they anticipated.

OLDER SYSTEMS INSTEAD OF NEWER SYSTEMS

Senator **Levin**. Congress intended these ANG RF-4Cs for the RDF to be modified as soon as possible. Won't any slip in the schedule mean these aircraft will be required to use the older, less accurate and more difficult to support navigation and targeting systems while their active forces counterparts in the RDF have the newer systems?

Answer. Yes, any slip in the ANG RF-4C modification schedule will mean that these aircraft will have to continue to rely on the old, less accurate and difficult to support navigation systems they now have installed.

While there is no funded program to upgrade the rest of the RF-4C fleet, every effort is being made to upgrade the RDF committed ANG aircraft as soon as possible. Because the Air Force will use an F^3 approach, the Inertial Navigation Unit will be the latest design and will, as a minimum, provide the required performance and reliability at the lowest possible life cycle cost. Because of the numbers and types of aircraft that will be equipped with an F^3 INU, commonality with the rest of the Air Force is assured.

LOGISTICS BURDEN

Senator **Levin**. Doesn't this mean that the logistics burden imposed on the RDF remains heavier, contrary to our committee's intent? Doesn't it mean that these ANG RF-4Cs will have less combat effectiveness than those with whom they will fly and fight in the RDF active's tactical reconnaissance forces, again contrary to the committee?

Answer. The F^3 INU equipage approach, which will be employed to satisfy the ANG RF-4C inertial navigation system requirements, decreses the logistics burden for the following reasons:

(a) Many USAF aircraft are usig Inertial Navigation Units (INU) which meet the F^3 performance specification to include the C-130 (500 units), F/FB-111 (392 units), A-10 (700 units), HH-60D (132 units), C-17 (to be determined) and the F-16 C/D (approximately 800 units). This insures the worldwide pipeline availability of F^3 INUs.

(b) The F^3 approach allows technicians in many commands to be trained to deal wth a common core of INU inputs and outputs as well as with a limited number of types of F^3 systems. As these individuals transfer from command to command or perhaps transition to the civilian world, possibly as ANG technicians, the types of INUs they maintain will remain standard. This will flatten out the technician learning curve and permit more accurate troubleshooting of malfunctioning inertial systems and therefore facilitate a more rapid return to service of F^3 equipped aircraft.

(c) Fighter aircraft equipped with an F^3 INU enjoy the highest level of reliability yet achieved in that environment. The present F^3 Mean Time Between Failure (MTBF) is better than 330 hours. The incumbent F^3 system is to reach 525 hours MTBF by 1985 with vendor financed F^3 INU upgrades to improve reliability and payback by the vendor in additional spare units if the reliability goal is not met.

(d) As new technologies or refinements of the current technology are introduced into the Air Force's F^3 INU inventory, their reliability is expected to increase to much higher levels that are being achieved today. Compliance with the F^3 approach insures that the committee's intent will be carried out to the fullest possible extent.

ACCELERATE PROGRAM

Senator **Levin**. Will the AF be able to accelerate the program for upgrading the ANG RF-4Cs to get on contract before the end of the fiscal year 1984 fiscal year? Can you assure me this will be done?

Answer. We are accelerating the program with the intent of getting on contract at the earliest possible date. Contract action by the end of fiscal year 1984 is extremely optimistic. Regardless, we are proceeding toward that goal.

Questions Submitted by Senator Jeff Bingaman, Answers Supplied by the Department of the Air Force

LANTIRN

Senator **Bingaman**. In view of the technical difficulties that LANTIRN has encountered as well as the negative reports by some technical experts, why should this committee even consider a request for production funding? Why shouldn't we buy the Navy's F-18 navigation pod instead and cancel the targeting pod?

Answer. LANTIRN procurement is needed in fiscal year 1985 to allow an efficient and timely transition from completion of development testing in December 1984 to start of production in February 1985. Any delay in funding will not only increase total cost of procurement, but will also seriously impact the current negotiations for establishing a fixed price contract for procurement of 720 LANTIRN pod sets.

The LANTIRN navigation pod has been highly successful in flight test and is progressing well in demonstrating performance specifications. The targeting pod resumed flight testing on 27 March 1984 after correction of deficiencies which were identified in the initial seven flights. The flight test of both pods is projected to be fully completed before production decision in February 1985. Consequently, a production decision at that time would be totally consistent with good management procedures for transitioning from full scale development to production.

Procuring the F-18 FLIR for Air Force aircraft is not an attractive alternative for several reasons:

(a) The LANTIRN system includes both a navigation pod and a targeting pod, whereas the Navy's F-18 FLIR does not provide any of the capabilities of the navigation pod and does not provide many important capabilities of the targeting pod such as dual-mode automatic tracker, Air Force standard software, automatic Maverick Missile boresight correlation, and growth potential for an automatic target recognizer.

(b) The modifications required for an F-18 FLIR to satisfy Air Force targeting pod requirements would increase development costs and considerably extend initial deployment date.

(c) Based in previous estimates, there would be no savings in procurement cost of the modified F-18 FLIR versus the LANTIRN targeting pod.

(d) The commonality now existing between the LANTIRN targeting pod and navigation pod would be negated.

AMRAAM

Senator **Bingaman**. What is the status of a NATO-wide IFF (Identification-Friend-or-Foe) system? Since we don't have a common IFF, doesn't that drastically reduce the value of beyond-visual-range weapons like AMRAAM (Advanced Medium Range Air to Air Missile)?

Answer. Substantial progress has been made toward achieving NATO interoperability for IFF systems. The NATO Identification System (NIS) consists of two separate systems to achieve this interoperability. The Indirect Subsystem (ISS), which will use the in-place command and control system in Europe with new sensors and processing to identify friends, enemies, and neutrals, and disseminate the information, is currently in development for a European demonstration in FY 85. The architecture for the indirect system has been agreed to by NATO. When the demonstration concludes, the NATO Standardization Agreement (STANAG) will be ratified.

The direct portion of the NIS, the Mark XV IFF, has also made substantial progress. The United States, United Kingdom, and France have agreed to the U.S. compromise approach on the operating frequency band and the USAF is participating in a German study of frequency compatability to win their agreement. All four countries are building brassboard models using the U.S. preferred D band (formerly called L band) operating frequency for evaluation.

The current state of identification techniques does not undercut the utility of beyond visual range (BVR) missiles such as AMRAAM. The utility of BVR missiles is not dependent upon a standardized NATO system, although an improved IFF capability would enhance employment options, flexibility, and operational effectiveness. Therefore, we are pursuing, as a matter of high priority, a comprehensive program to improve our identification capability. The approach combines complementary, present day identification procedures/techniques, and equipment to maximize our current capabilities and to serve as a basis to evolve near and far term identification improvements.

AIRBORNE SELF-PROTECTION JAMMER

Senator BINGAMAN. The Airborne Self-Protection Jammer is to be acquired for all U.S. fighter aircraft, at a cost of over $1.3 million a copy. Couldn't some of our late-reinforcing aircraft do without this system or use pods?

ANSWER. The Airborne Self-Protection Jammer (ASPJ) is being acquired for only the F-16C at this time. F-16C aircraft in combat units will be fully equpped with ASPJ; however, those aircraft used for student training will only have the Group A wiring modification. The F-16As already in service will still be without ASPJ and will be required to use external jamming pods. ASPJ for the F-16 will eliminate constraints associated with external ECM pod carriage such as increased aerodynamic drag which reduces combat radius and the denial of weapons station usage which reduces payload. Because ASPJ provides automatic jamming without aircrew interaction, the reduced workload will allow for improved situational awareness and mission effectiveness.

STAND-OFF DELIVERY

Senator BINGAMAN. What is the Air Force doing to provide some standoff delivery capability for various submunitions like Skeet?

ANSWER. The Joint Tactical Missile System and the Boosted GBU-15, AGM-130B, are options for employment of Skeet. They may also carry Boosted Kinetic Energy Penetrators and Combined Effects Bomblets.

BASE AIR DEFENSE

Senator BINGAMAN. Will the RAPIER surface-to-air systems to protect U.S. airbases in the United Kingdom be stationed on those U.S. bases in peacetime as well as wartime? If not, why not?

What about for ROLAND at U.S. bases in West Germany?

ANSWER. In peacetime, the RAPIER units will be stationed at Royal Air Force (RAF) installations in the vicinity of the U.S. air bases to be defended. The RAPIER will deploy to the U.S. bases both for exercises/evaluations and in time of tension/war.

The decision to station the RAPIER at RAF bases was made after surveying the U.S. air bases. The detailed survey, conducted by HQ USAFE, revealed that stationing RAPIER at U.S. air bases would require some new technical (working) facilities and new housing for the RAF personnel. Under the original agreement, these costs were to be borne by the United States. The United States and United Kingdom agreed to consider stationing at RAF installations providing that operational requirements could be met. Additionally, the basic agreement was revised so that the United Kingdom would pay for the technical and housing facilities in return for a further waiver of TRIDENT Research and Development (R&D) recoupment. Thus, no US funds were necessary for the beddown. This arrangement was agreed in the basis U.S.-U.K Memorandum of Understanding (MOU) which was signed in February 1981. Exercises have indicated that the RAPIER units will be capabile of responding to the USAF bases within the minimum peacetime readiness standards. (During periods of increased tension, the RAPIER units would be deployed at the USAF bases and would, therefore, be able to meet the readiness criteria.)

At the present, the Air Force and the German Ministry of Defense are exploring the possibility of stationing ROLAND at the U.S. bases. Germany will bear the cost of the beddown and is extremely concerned about the cost of this option. The U.S. prefers to have the ROLAND at its own bases. This issue will be addressed during the follow-on United States-German discussions; a final draft agreement should be completed for approval by Congress and the German Parliament by summer 1984.

F-15 CHAFF AND FLARE DISPENSERS

Senator **Bingaman**. Last year an Air Force F-15 pilot complained to me about the lack of chaff and flare dispensers on our F-15s. He said the Israelis immediately modify the F-15s they purchase from us with this essential capability. He also told me that General Creech had undertaken to fix this problem.

Can you tell me where this program stands, hcw much it will cost, and how soon our F-15s will all be modified to have a chaff/flare dispenser protection system?

Answer. Air Force's chaff and flare dispenser for the F-15, the AN/ALE-45 Countermeasures Dispenser (CMD) system, completed initial operational test and evaluation (IOT&E) in December 1983. The airframe part of the CMD kit is to be incorporated into production line F-15C/D aircraft starting November 1984 (the last 19 aircraft of the fiscal year 1983 buy). The black boxes will be installed on these aircraft having the airframe kit and on subsequent production line aircraft starting December 1985. Retrofit of currently fielded F-15Cs and Ds with the CMD airframe kit and black boxes will start November 1985 and complete by April 1988. Retrofit of F-15As and Bs, if funded, could occur on the Multi-Staged Improvement Program (MSIP) line from March 1988 through 1992. (This schedule is the accelerated F-15 CMD program). The average unit flyaway cost of the retrofit and production installed CMD is approximately $360,000.

TECHNOLOGY BASE

Senator **Bingaman**. On page 5 of your prepared testimony, you noted the importance of funding for the technology base. Yet, the Air Force budget for basic research and exploratory development in fiscal year 1985 hardly shows any real growth over the fiscal year 1984 budget. And the fiscal year 1984 budget for research and exploratory development, after congressional action, in turn had no real growth over the fiscal year 1983 level. Are we doing enough to insure our long-term scientific and technological lead over the Soviets? If cuts must be made in the overall Air Force R&D budget, should we try to protect the 6.1 and 6.2 accounts?

Answer. The Air Force feels that the technology base program reflects service priorities. We are closely monitoring our adversaries technology advancements as evidenced by papers in open literature and fielded systems. Our program is a reflection of satisfying high priority modernization needs, and maintaining a technology base program to provide future technology options for system developments and preventing technological surprise by our adversaries. The 6.1 and 6.2 accounts are extremely critical for achieving our goals of fielding qualitatively superior weapon systems through long-term capability enhancement and should be maintained at their requested levels.

UNIVERSITY R&D

Senator **Bingaman**. I also noted on page 5 no mention of the importance of the technology base in our universities. Could you tell me how much of the Air Force's R&D budget has been sent in university research laboratories over the past 5 years and what the estimates are for fiscal years 1984 and 1985? What is the Air Force doing to strengthen the university research base from which all of engineers and scientists flows?

Answer. The Air Force has always used universities to conduct the majority of our basic research program. In fact, over fifty percent of the basic research program goes to university research and development. The following table includes funds from the 6.1, 6.2, 6.3 and 6.4 programs.

[In millions]

Fiscal year:	*Total*
1979	$84.3
1980	97.7
1981	104.9
1982	127.5
1983	133.0
1984	[1] 140.9
1985	[1] 149.9

[1] Best estimate.

We are acutely aware of the number of scientists and engineers that graduate each year from our universities. We have programs in being which we believe will help strenthen our technological base. First, we are providing 10 million each year for 5 years to purchase the latest scientific instrumentation for placement in U.S.

universities. Second, we have several programs which focus on both the faculty and the students. These include the university resident research program, the summer faculty research program, the faculty mini-grant program and the faculty/student summer support program. Third, we have in cooperation with U.S. industry started four different university assistantship programs with U.S. universities. The four programs include thermionic engineering and research, advanced composites, research in aircraft propulsion, and manufacturing science. The Air Force has effective initiatives established to supplement university programs for scientists and engineers.

Senator GOLDWATER. I thank you very much for coming.

Everything will be in the record.

The subcommittee will stand adjourned.

General RUSS. Thank you.

[Whereupon, at 4:45 p.m., the subcommittee adjourned, subject to the call of the Chair.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1985

TUESDAY, MARCH 13, 1984

U.S. SENATE,
SUBCOMMITTEE ON TACTICAL WARFARE,
COMMITTEE ON ARMED SERVICES,
Washington, D.C.

JOINT SURVEILLANCE TARGET ACQUISITION RADAR SYSTEM [JSTARS]

JOINT TACTICAL MISSILE SYSTEM [JTACMS]

The subcommittee met in executive session, pursuant to notice, at 2:08 p.m., in room SR-222, Russell Senate Office Building, Senator Barry Goldwater (chairman) presiding.

Present: Senators Goldwater, Warner, Quayle, Nunn, Kennedy, Bingaman, and Dixon.

Staff present: Arnold L. Punaro, staff director for the minority; William E. Hoehn, Jr., Carl M. Smith, James C. Smith III, John G. Campbell, professional staff members; and Tamara L. Farnsworth, staff assistant.

Also present: Gerald J. Smith, assistant to Senator Goldwater; Les Brownlee, assistant to Senator Warner; Ronald P. Kelly, assistant to Senator Humphrey; Jon Etherton, assistant to Senator Jepsen; James Steinberg, assistant to Senator Kennedy; Edward McGaffigan, Jr., assistant to Senator Bingaman; and Charles C. Smith, Jr., assistant to Senator Dixon.

OPENING STATEMENT BY SENATOR BARRY GOLDWATER, CHAIRMAN

Senator GOLDWATER. The subcommittee will come to order.

The subcommittee meets this afternoon to receive testimony on the Joint Surveillance Target Acquisition Radar System [JSTARS] and the Joint Tactical Missile System [JTACMS]. I would like you to develop specifically the critical performance data, rapid turn rate approaching the stall, and so forth, in language that the members of the subcommittee can understand.

This I think is a very, very crucial point of the entire development program. These are joint Army and Air Force programs designed to strike second echelon targets in order to disrupt the reinforcement of troops at the forward edge of the battle area.

The subcommittee welcomes Lt. Gen. James H. Merryman, Deputy Chief of Staff of the Army for Research, Development, and

Acquisition; Lt. Gen. Robert D. Russ, Deputy Chief of Staff of the Air Force for Research, Development, and Acquisition; Maj. Gen. Louis C. Wagner, Assistant Deputy Chief of Staff of the Army for Operations and Plans, Force Development; and Maj. Gen. William A. Gorton, Director of Operational Requirements, Deputy Chief of Staff of the Air Force for Research, Development, and Acquisition.

The JSTARS and JTACMS programs have been somewhat controversial in the past. While the Congress and OSD have expressed strong support for these programs, the services appear to have been somewhat less enthusiastic. In part, this lack of enthusiasm may be attributed to what some have described as a "forced marriage" compelled by OSD and Congress before the services had an opportunity to adequately establish their requirements for these two programs. However, given the strong endorsement of Congress and OSD, it seems to me that by now these requirements should be well established.

During the past 2 years the Congress has placed considerable emphasis on achieving the maximum level of commonality in these joint programs. I think it is fair to say that the committee still regards this as a worthy goal, but at the same time we realize that commonality should not be stressed to the point that it degrades operational effectiveness. It may not be possible or even reasonable to expect both the Air Force and Army to deploy identical JTACMS weapons. However, it is not unreasonable to expect to make maximum use of subcomponents such as data links, inertial guidance systems and warheads. I request that our witnesses clearly address the issue of commonality in their approach to both the JSTARS and JTACMS programs.

Also, since there appears to be a major disagreement over the choice of platforms for the Air Force JSTARS, I would ask that you discuss in detail the relative merits of the two candidate aircraft, the C-18 and TR-1.

Gentlemen, it is a pleasure to have you here with us this afternoon. We look forward to your testimony.

If you have prepared statements, you may put them in the record and summarize.

General Russ, please proceed.

STATEMENT OF LT. GEN. ROBERT D. RUSS, DEPUTY CHIEF OF STAFF FOR RESEARCH, DEVELOPMENT, AND ACQUISITION, U.S. AIR FORCE

General Russ. Thank you, Mr. Chairman.

It is a privilege to be here today and to present the joint programs, joint STARS and JTACMS in particular.

We would like to enter a joint statement for the hearing record.

Before we get to specifics and to answer the questions you have raised in your introductory remarks, I would like to offer a few general remarks on joint programs.

Now, there are three payoffs that you can get from a successful joint program.

First, joint programs will provide you economy of effort because joint programs will allow you to pool your resources to solve your joint requirements.

Second, joint programs can result in substantial cost savings and this naturally appeals to us as taxpayers and also appeals to us as resource managers because we have many needs for the required funds.

Third, when our systems can be common, they generally become easier to support and generally less costly to support, but I would offer a caution at this point.

Last week in a hearing in the House, Dr. DeLauer made a statement on two cautions with regard to joint programs. I would like to read that because I think it is important. He said:

> First, common systems have common vulnerability. We must not let capability become standardized to the point where they can be rationalized by a single type countermeasure.
>
> Second, don't always count on joint programs to save money. In addition to economy, joint programs incur costs. Management, manpower, the price of accommodating more than one user, the time spent on rationalizing different operational and technical requirements all use resources.
>
> It is not possible to compute the potential dollar savings in joint programs versus such additional cost. The real promise is in strengthening our joint capabilities and procedures. We will fight together; we must prepare together.

We will see today some of the ways we plan on integrating our forces and how we will fight together.

Senator GOLDWATER. May I ask you a question?

How did the House committee react to that statement?

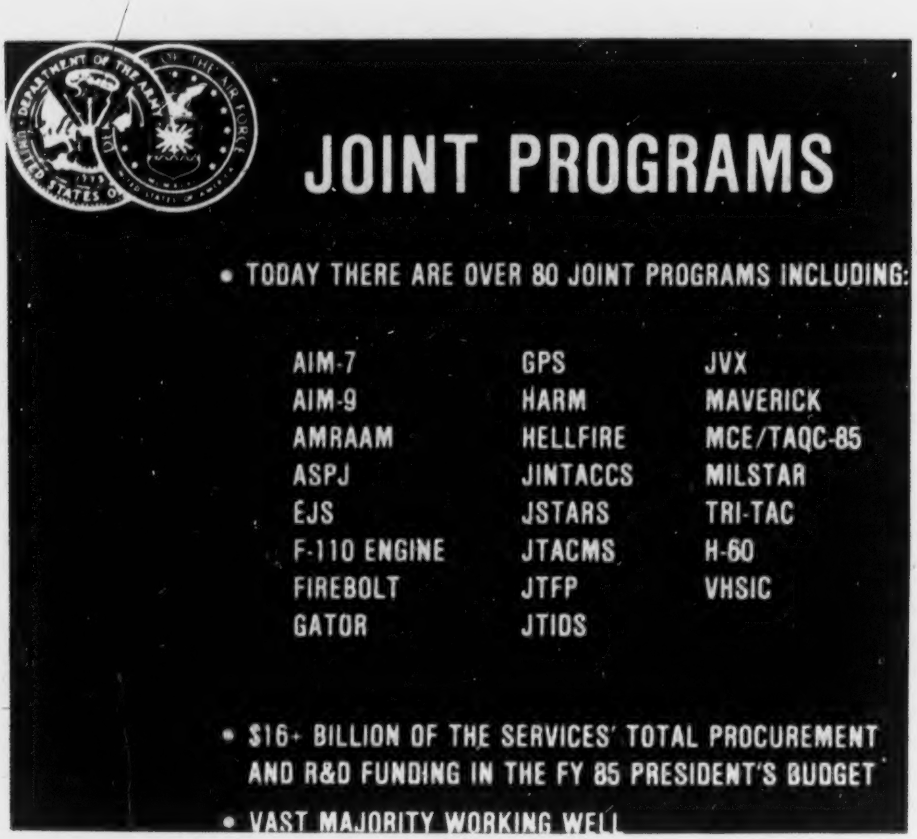
General RUSS. Sir, I wasn't at the hearing when it was made. So I am not sure I can give you an answer to that.

Senator GOLDWATER. Didn't you get any rumors?

General RUSS. General Gorton was there.

General GORTON. I don't recall, Mr. Chairman, that there was any specific reaction to that statement. There was quite a bit of discussion, as you can imagine, during that whole hearing about the efficacy of joint programs, but I don't recall any specific reaction to that portion of the statement, Mr. Chairman.

General RUSS. There is also a persistent notion that joint programs don't work and that the services don't support them. I believe this view is inaccurate. On balance, I think we do quite well on joint programs.



JOINT PROGRAMS

- TODAY THERE ARE OVER 80 JOINT PROGRAMS INCLUDING:

AIM-7
AIM-9
AMRAAM
ASPJ
EJS
F-110 ENGINE
FIREBOLT
GATOR
GPS
HARM
HELLFIRE
JINTACCS
JSTARS
JTACMS
JTFP
JTIDS
JVX
MAVERICK
MCE/TAQC-85
MILSTAR
TRI-TAC
H-60
VHSIC

- $16+ BILLION OF THE SERVICES' TOTAL PROCUREMENT AND R&D FUNDING IN THE FY 85 PRESIDENT'S BUDGET
- VAST MAJORITY WORKING WELL

Today we have over 80 joint programs. I have shown 23 of the major ones on this slide.

In the budget that is before the Congress at this time we have over $16 billion in Army, Air Force, and Navy budgets that support joint programs. Most of these programs are working well.

For a joint program to work well we must have three things going for it.

First, you must have a mutual need or, said another way, we must agree on requirements for a system. This means joint requirements definitions must precede any joint endeavor. I think that is probably the most critical element in developing a joint program. If you don't get the joint requirements initially, then you don't have a good sound firm basis for your joint program.

Second, we must agree on a management structure. By that I mean who is going to run the program, who is going to pay for it and in what proportions.

Third, whatever acquisition strategy we come up with, it must meet the need date for the system in the service.

If these elements are present, then you have a commitment. On those programs where they have been present we have had highly successful joint programs.

What I would like to do now is turn it to my colleague and friend, Jim Merryman who will have comments on some of the threats we face.

Senator **Goldwater**. Do you believe there was an understanding on the joint requirements before the project started?

General RUSS. In the cases that we have now, no, sir, there was not. We have worked on that over the years and we have solved a lot of those problems, but there was not a joint statement of need or joint definition of requirement initially when we got started.

Senator GOLDWATER. Do you think that that understanding of joint need is present now?

General RUSS. Yes, sir, I do.

Senator GOLDWATER. The only disagreement is not really between the services, is it?

General RUSS. I think you will see as we get into the programs, sir, that we have defined our needs in the joint STARS program right down to what sort of angle we need on the radar beams and right down to the lowest level.

We have not finalized our definitive requirement on the JTACMS yet. The Air Force has just about completed theirs. The Army should have theirs down in the next few weeks.

That is critical to the development of a system. As an example, if the Air Force decides they need a system that will go, let us say, 50 miles or 100 miles and the Army needs one that will go 200 miles, you have to start off with some kind of agreement, to start off, on what range that missile will be.

You have to start on how much the missiles should weigh because firing from the ground requires certain sorts of penalties and hanging it on an airplane requires certain penalties.

Although basic needs and requirements need to be set down at first and they need to be agreed upon. Once that happens you give that to the developer and he will go out and develop and build you a missile that will do those things.

Senator GOLDWATER. How about the platform? Is there an agreement between the Army and Air Force on the specific platform?

General RUSS. The Army's platform is the OV–1 and both the Air Force and Army agree that that is the platform they should use.

Senator GOLDWATER. That is the OV–1?

General RUSS. Yes, sir, Mohawk.

Senator GOLDWATER. When you get into JSTARS, you have two, don't you?

General RUSS. Yes, sir, the Air Force's preferred option is C–18. We look at the joint STARS' platform similarly, like looking at AWACS.

An AWACS looks at everything in the air and the joint STARS' platform looks at everything on the ground. In fact, we sometimes call it an upside down AWACS.

So, our preferred solution would be a C–18, although we have not made a final decision on that because we have run into controversy, as you well know, both within the building and over in Congress.

You will see in the briefing today that our commanders in the field support the C–18 as a platform. They believe it has the flexibility not only in the Central European theater, but also flexibility to move around the world in various trouble hotspots such as going to Southwest Asia, going off to the Pacific and other areas where you might want that capability.

Senator **Goldwater**. To clarify it in my mind, didn't we change the designation, C-54 to C-18? Is that what we are talking about?

General **Russ**. We are talking about a 707. We are talking about the same air frame we are flying the AWACS on. All we are doing is missionizing the inside of the airplane for the air-to-ground role similar to the way that we missionized the AWACS to the air role.

Senator **Goldwater**. There are no more C-8's left?

General **Russ**. The ones we are talking about are the ones that the Air Force has procured recently off the commercial market. We would not intend to buy new airplanes. We would buy used airplanes.

We bought a series of 707's and took the engines off them and modernized our tanker force. We paid a little over $3 million each for those airplanes.

We think that would be a prudent expenditure of funds to gain a platform.

Senator **Goldwater**. I was wrong. It is the C-18.

General **Russ**. Yes, sir.

Senator **Kennedy**. When is the decision going to be made on that platform?

General **Russ**. We are doing studies right now, Senator Kennedy. We don't think the decision really has to be made for another year.

The decision that is critical, starting out about this time frame, is which airplane are we going to test radar on. The Air Force initially wanted to test it on a C-18. There were others who wanted to test it on the TR-1.

We have reached an agreement that we will test it on the TR-1 as long as we still have the capability to put it on the C-18.

In other words, we will be able to form, fit and function, if you will, the radar and be able to put it on a C-18 at a later time, once the decision is made on what the final platform will be.

Senator **Kennedy**. Could you briefly give us the difference between the capability of the TR-1 versus the C-18?

As I understand, there is a difference in the support for the system itself, the support equipment that would be on the C-18 and not on the TR-1; is that right?

General **Russ**. Yes, sir, let me see if I can briefly summarize that.

First the TR-1 flies at altitude. By that I mean he flies around [deleted].

The C-18, on the other hand, flies at lower altitude, [deleted].

Now because he flies at high-altitude, he flies a lot slower. The TR-1 is a one-man platform. In other words, there is just one pilot in the airplane.

He has sensors on the airplane and he receives the information from his radars and it is automatically transmitted to a ground station.

The C-18, on the other hand, is able to process that material and that information he receives on board the airplane. He would have various stations, if you will, in the back of the aircraft, pepole sitting down at scopes and able to read and interpret the information at that time.

As far as maintainability and as far as support, we believe that it is easier to support a 707 type airplane than it is a TR-1. The

TR-1 requires special support, pressure suits and that sort of thing because he flies at very high altitude.

It is shirt-sleeve flying in the C-18. That is not to say that you can't support the TR-1. I would like to make sure that I don't overstate the case because we have not finally decided on whether we would take the TR-1 or the C-18.

Senator **Kennedy**. Finally, on that, what about the vulnerability of the two platforms?

General **Russ**. We have done a study to determine the vulnerability of the platforms. Again, General Gorton will mention some things about it.

Let me say the bottom line of that study was that either platform [deleted]. If he wants to expend the resources to go over and shoot that airplane down, he can do it.

We believe that the TR-1 has some advantages in that it flies at altitude. It is a little harder to get to altitude. On the other hand, a C-18 has the advantage that it is faster and he can run.

The other thing we would like to look at on the C-18, we would consider putting a terminal in it where the AWAC airplane could transmit to the C-18 what the existing air battle situation is.

So, the C-18 would know if any airplanes were around and trying to come after him.

[Deleted.]

He gets his survivability [deleted].

Senator **Goldwater**. The red line on the TR-1 I think is [deleted] isn't it?

General **Russ**. It is less than that at altitude, sir. I am not sure. I think it is [deleted] at operating altitude once he gets there.

Senator **Goldwater**. He is limited to a standard turn?

General **Russ**. No, sir.

Senator **Goldwater**. The other one has red line or G at six, six and a half?

General **Russ**. I don't think they would quite get that. I think [deleted] is probably all they would want to pull. You have an extremely maneuverable airplane comparing the TR-1 in its operating regime with the C-18.

As you know, you can pull the engines back and you can put the nose down and put them in reverse as far as you are concerned, if you have reversible engines and go to low altitude.

In fact, the capability to lose altitude quickly was one of the criteria we put in the AWAC airplane. It had to come from [deleted] in a very short period of time.

The way they did that was to put all four engines in idle and engage full speed breaks. I have tried that and I tell you it comes down. It shakes a bit as it comes down. You are not too happy if you ride in the back.

It is a survivability sort of thing to get away from somebody shooting at you.

If there are no further questions, General Merryman has a statement and some slides he would like to cover.

[The joint prepared statement of General Russ and General Merryman follows:]

JOINT PREPARED STATEMENT OF LT. GEN. ROBERT D. RUSS, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT, AND ACQUISITION, HEADQUARTERS, U.S. AIR FORCE; AND LT. GEN. JAMES H. MERRYMAN, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT AND ACQUISITION, HEADQUARTERS, DEPARTMENT OF THE ARMY

Mr. Chairman and members of the committee, we are pleased to have the opportunity to speak with you today on the subject of joint programs. Accompanying us today are Major General Gorton, Air Force Director of Operational Requirements, and his Army counterpart, Major General Wagner, Assistant Deputy Chief of Staff for Operations and Plans, Force Development, who will address the specifics of the Joint Surveillance and Target Attack Radar System (Joint STARS) and Joint Tactical Missile System (JTACMS) programs. We would like to preface their testimony with some general remarks about what makes a joint program work.

If we put it together properly, a major system joint acquisition program will provide the participating services fielded systems with substantial commonality that meet their requirements.

Contrary to some popular perceptions, we have had more successes than failures in joint programs. For example, last year's Defense Science Board (DSB) summer study on Joint Service Acquisition concluded that the majority of programs with some joint aspects have been successful. Nevertheless, the perception remains that joint programs invariably have difficulties.

First and foremost, it is the front end work that has spelled the difference between success and failure in a majority of cases. Where the participating services have gotten together and worked out a clear, shared perception of overlapping or common requirements, and where they had agreed on a management approach, there has been a high incidence of success in the joint management aspects of the program. This has been the case in such successful joint acquisition programs as the Advanced Medium Range Air-to-Air Missile (AMRAAM), the Airborne Self Protection Jammer (ASPJ), and the High speed Anti-Radiation Missile (HARM).

Conversely, major acquisition programs that have failed to get off the ground or later bogged down from loss of support or, worse, produced systems that did not satisfy the Service's operational needs have frequently been characterized by failure to get the necessary front end actions straight before starting out. In these cases the joint requirements and management process was not thoroughly exercised; the selection of the lead Service, a management structure, and even selection of the joint program itself was not made in a framework of logic with which all could agree.

Therefore it is imperative, in order to have a successful joint program, that the requirements overlap be real and substantial, and that there be agreement by the Services on a joint management structure and acquisition strategy that will satisfy the requirements of each service at a reasonable cost. There is considerable relevance in this observation for the two joint programs that are the subject of today's hearing.

What the Air Force and Army have been striving to do during preparation of the fiscal year 1985 budget submission is to get Joint STARS and JTACMS front end issues squared away so we can have successful programs that will satisfy the requirements of both Services. We are talking about a multi-billion dollar investment in a relatively new and unproven warfighting capability and we want to get it right.

This past year the Air Force and Army have harmonized their requirements for Joint STARS, and the Joint Program Office has translated these requirements into a system specification in a request for proposals (RFP) which is about ready for release, and we now have an agreed upon acquisition strategy for full scale development. Now we have the foundation to move out in fiscal year 1984 with a joint program that holds promise for satisfying unique Army and Air Force standoff surveillance and attack needs.

With the JTACMS program, we are a few months behind Joint STARS in working out the same kinds of issues. Both the Air Force and Army are in the midst of intensive reviews of their own service requirements for this weapon system, and we plan to join together to begin hammering out the joint requirements issues in the next few weeks. To the extent that we are able to establish clear joint requirements, we can get on with setting up a joint acquisition strategy that makes sense.

In closing, we would like to emphasize that the differences in service requirements are not artificial. Each service operates in a different medium and has unique needs regarding organization, environment, operational procedures, provisioning, training, and a host of other areas. Where these requirements can be realistically harmonized, joint programs are a cost effective response to the need, providing we get our joint requirements act together before jumping off.

Finally, we want to assure you that we, the Air Force and the Army, are working closely to define specific joint aspects of both the Joint STARS and JTACMS programs. We are giving jointness our best shot, but want to be sure it is accomplished in both an effective and efficient manner.

STATEMENT OF LT. GEN. JAMES H. MERRYMAN, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT, AND ACQUISITION, HEADQUARTERS, DEPARTMENT OF THE ARMY

General MERRYMAN. Senator Goldwater, following my presentation we will brief you in detail on JSTARS and JTACMS and tell you where we are with the program.

What I would like to do briefly at the request of the committee is just to refresh all of our memories as to what is the threat that drives us to wanting to do what we are talking about today.

[Chart deleted.]

This chart is one you are all familiar with. It is one of the charts that DIA briefed you on when they came over a couple weeks ago.

I will just hit the one on the tanks which show you where the Soviets are, the number of tanks are on the left side, the years are on the bottom of the chart, the fact they are phasing out their old tanks, bringing in the new tanks, and will soon bring in the newer ones identified in the future.

In the next three charts what I have done is to show you what we have with tanks armored personnel carriers and artillery and also show you what the Soviets have, to give you a feel.

[Chart deleted.]

This shows you the same thing now in APC, armored personnel again the number of Soviet tanks shown with the red line. The years are at the bottom. The number of U.S. tanks and types are shown.

This is our tank picture today, United States and Soviets. In a moment I will give you a feel and show you NATO-Warsaw Pact.

[Chart deleted.]

This shown you the same thing now in APC, armored personnel carriers.

Here is the Soviet picture today and where they are going.

Here is where we are today as far as numbers. Here, again, you can see a considerable disparity between the number that we have and the number that they have.

[Chart deleted.]

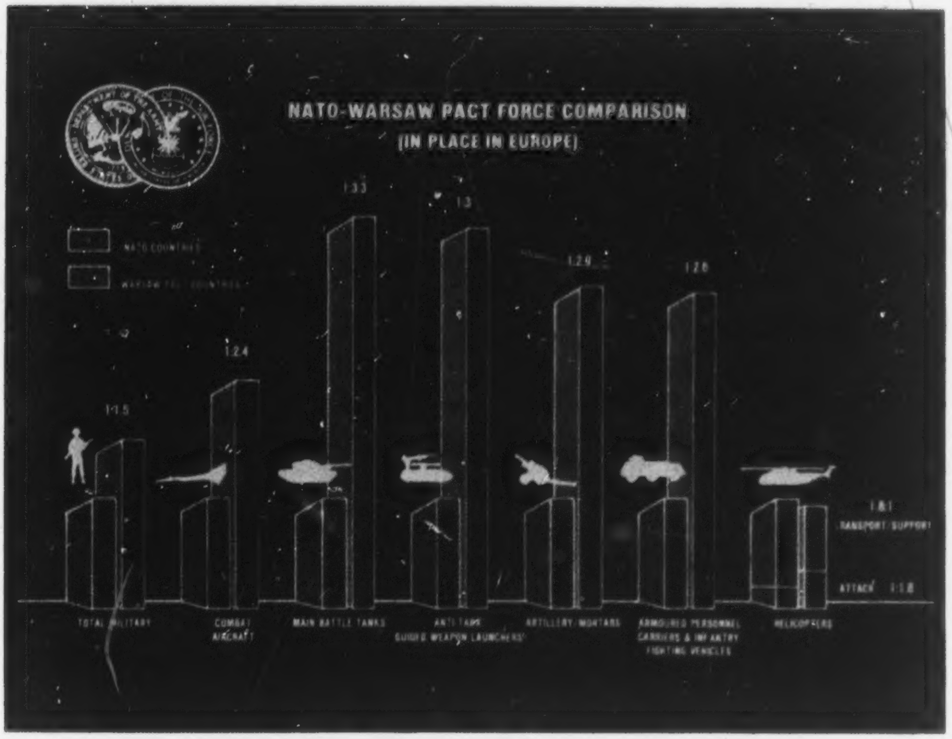
This is artillery. Again, you see the same continued disparity in numbers between what the United States has and what the Soviets have.

Senator NUNN. Is that United States-Soviet or is that Warsaw Pact-NATO?

General MERRYMAN. Those three are United States-Soviet. This one I am showing you is Warsaw Pact-NATO.

Senator NUNN. The first three don't seem to me to be very relevant when we are fighting in a large posture over there. I realize they outnumber us significantly if you add the allies, too. I can't conceive the circumstances where we plan to go against the Soviets one on one in Europe.

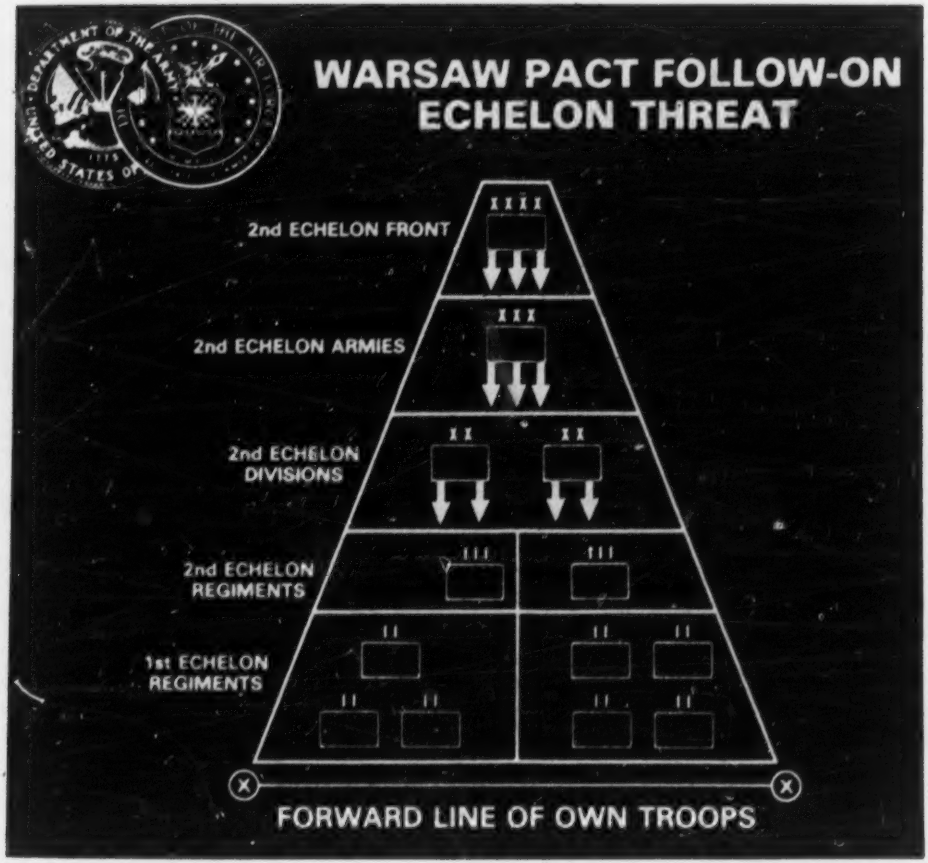
General **Merryman**. We don't. The only reason I showed them is because the charts the committee was briefed on heretofor were United States-Soviet. I showed those as an example.



I show this chart to get at what you are talking about. This is NATO-Warsaw Pact. What this does, sir, is show you across the bottom total military, combat, aircraft, tanks, antitanks, mortars, and so forth. Blue is us, red is them.

It tells you the same story. The Warsaw Pact outnumbers us in everything except transport helicopters which drives us to requirements for a thing like JTACMS and JSTARS.

What all this amounts to, the fact they have so much more than we do, whether we are NATO or United States, is that they have the ability to attack in echelons.



WARSAW PACT FOLLOW-ON ECHELON THREAT

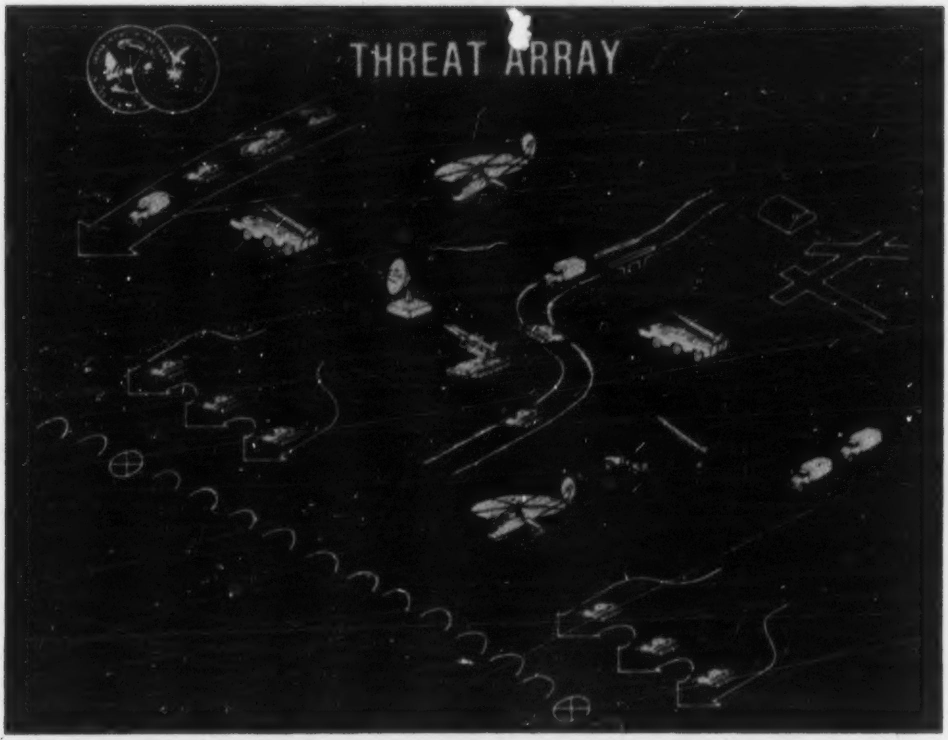
2nd ECHELON FRONT
2nd ECHELON ARMIES
2nd ECHELON DIVISIONS
2nd ECHELON REGIMENTS
1st ECHELON REGIMENTS
FORWARD LINE OF OWN TROOPS

I think most of you have seen charts like this before. The only point I want to get across is the fact they will have the first echelon division consisting of first and second echelon regiments backed by second echelon divisions, backed by second echelon Army.

They are going to come at you and you are greatly outnumbered.

Why do you need JTACMS and JSTARS?

We think that the only way to handle the situation where you are so badly outnumbered is to get them before they ever get to you because if they get to you in that great mass, it is going to be very difficult to handle.



What I have tried to do with this chart is, although they outnumber us, they have to come down certain routes of approach like these two roads.

We know they have certain fixed installations which are the things I have shown off the roads. The concept is if you can find those things and if you have capability to destroy those things before they hit your front line, that is the way to do it. That will be the key to success.

Now, I have just shown these few brief charts to sort of refresh our memory of why we are asking Congress this year for money for these two systems.

At this point we will tell you about these two systems and where we are.

Let me introduce General Gorton from the Air Force to discuss the JSTARS program first.

General GORTON. Mr. Chairman, I will discuss joint STARS and the reason I am discussing joint STARS is that the Air Force is the lead service on that system.

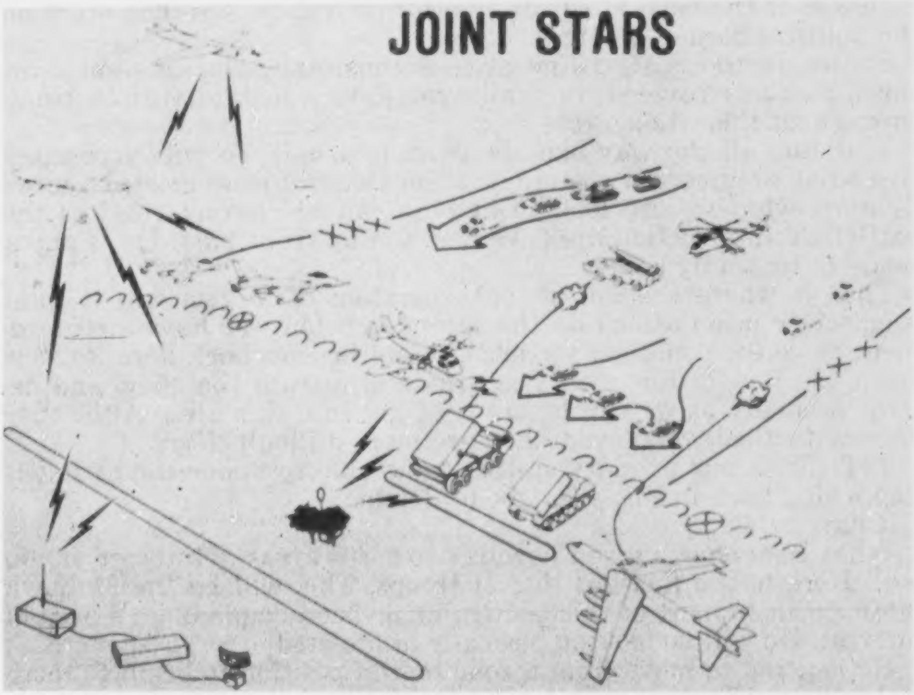
I will be followed by Maj. Gen. Lou Wagner who will be briefing JTACMS.

JOINT STARS—OUTLINE

Concept.
Commonality.
Program execution plan.
Target schedule.
Funding profile.
Summary.

I will briefly cover these general topics in the outline of the briefing. I will start off with a quick rundown on the concept of JSTARS.

It is a wide area, multimode radar as depicted by this yellow area that will be looking, as General Merryman pointed out, beyond the FLOT at moving targets, arriving and developing troop concentrations.



Shown is a schematic. First off, as we discussed earlier, the Air Force platform can be the C-18 or TR-1 [deleted] in both cases, [deleted] kilometers back.

They would be looking at moving targets. We also have the ability to look at [deleted].

The OV-1 Mohawk will be the Army platform in support of the division commander or corps commander in their areas of interest and will be looking at basically the same thing, basically the same radar.

Once again, the objective is to first identify what is happening back there, how it it characterizing itself and then do something interesting about it. That is represented by either being able to shoot smart, the organic fire power of the U.S. Army which is represented not only by follow-on systems such as JTACMS, but artillery and MLRS and be able to launch standoff systems from either Air Force aircraft represented by the B-52 or fighter aircraft, F-16, or direct attack, as with F-16 back in this area.

Both of these concepts require down link of data to Army systems of which there will be a number of them supporting the various divisions and corps and back to a ground central processing station for the Air Force platform.

I should have pointed out that the data links are common in all of this. The information is interchanged.

[Chart deleted.]

Let us take a look at a sort of overhead view from the Air Force C-18. This is an overhead of the central region of Europe.

What is shown in the hatched area is that area of continuous coverage of the central region, platforms will be standing off from the political border [deleted].

Shown in the dashed line area is the total coverage that is at times partially covered. Basically you have a look at various times throughout this whole area.

This line all the way back is about [deleted]. To put in perspective what we dicussed yesterday when General Russ briefed you on fighters, what we are looking at here can be characterized as the battlefield interdiction area. That is the up front part. He is about ready to tactically deploy.

That is where the largest concentration of targets will present themselves in an attack on the second echelon. We have a requirement to go back and get airfields, to get bridges back here, to slow down the flow of forces in this area and disrupt that flow and destroy as many as we can before they get into this area. After they become tactically deployed, they are more difficult to get.

JSTARS is our primary system to be able to understand what is happening back in this area about [deleted].

[Chart deleted.]

What I am showing you here is two corps areas of interest, if you will. Here is the forward line of troops. This will be the Mohawk platform in support of this particular division commander's area of interest. He will be looking basically at [deleted].

He is going to move from a road march position to begin to tactically deploy. This area is where he will be able to be brought under fire by the organic fire power.

We want to be able to start shooting at him as early as possible. That is the general area of the division commander's area of interest.

The corps commander has a broader area. He has to be planning more in advance. His Mohawk JSTARS support will be devoted to that to provide advance planning.

As far as C-18, once again, or the TR-1, the operational Air Force platform, a broader look and keep in mind all of this data is being passed back and forth on a common data link in order to get a better intelligence picture of what is happening and to hit him at the right time.

As an example, just as a tactic, to hit a Soviet division in road march, about [deleted] back, you may want to identify him there. If you hit him there, he has time to reorganize and still continue on his attack.

You would be able to orchestrate, knowing where he was, to hit him just before he tactically deploys, as one example.

That is a general overview of the concept. I could go on in a lot more detail. That should give you a general idea of what we are looking for for JSTARS.

Now let us talk about what we have done.

I am pleased to report there has been a lot of development since we last briefed this program between the Army and Air Force. Lou Wagner and I have worked pretty hard and we have a joint statement on agreed requirements.

We brought in the operators from the field, the people who are going to be responsible for fighting the war, sat them down and this is what they came up with. We are totally agreed that joint requirement is essential in any joint program.

[Chart deleted.]

Basically we agreed we need a [deleted] wide area surveillance, final configuration of the radar [deleted].

We need to be able to [deleted]. We can do that with the joint STARS radar for [deleted] guided missiles and direct attack aircraft, and use common data links in the [deleted].

Once we agreed to that, and granted it was a bit of a time before we got to that, we sat down and worked it out. First off we had to ask was there an overlapping requirement? The answer is yes and here they are and we can build the system on that base. This is what came out.

First off with regard to the radar, it will be modular identical. That doesn't mean it will be exactly the same. However, the major components of it will be exactly the same in the Army's platform of Air Force's platform.

What it means is when you put it in the Mohawk, TR-1, or C-18, there will be ancillary equipment such as cooling and how you fit it in that particular airplane.

The basic ingredients of the radar and its capability will be the same.

We do need a common data link to pass information. We agree on the [deleted]. We are about to come to a specific procurement strategy on that. We should have it in the very near time frame. Obviously, we want to be able to share information.

There are some issues. We talked about that briefly at the beginning of this hearing. Let me go into it.

It is a very simple question, but some complex issues are involved.

First off, with regard to the Army, the answer is fairly simple. Basically right now the OV-1 is a suitable platform. There are two aspects to the Air Force platform.

One, what should be the operational platform? And when we have to make that decision, which implies we might be able to look at a number of systems in development and that is exactly what we are doing.

The Congress has given us guidance as far as the development program, to look at both the TR-1 or C-18. We have the structure to do that. It will be in our RFP. It will not cause the contractors any difficulty.

As far as where we are going to go in terms of an operational platform, a number of the issues have been discussed. Let me take a look at what this committee said about that last year.

JSTARS LANGUAGE

SASC: The Army has selected the OV-1 Mohawk as the platform for the Army version of the JSTARS. It is the committee's desire that both the C-18 and the TR-1 be fairly evaluated on the basis of performance, survivability, flexibility, and cost before a selection of either aircraft is made.

This is basically what this committee stated to us. It said: "Evaluate the C-18 and TR-1 in a fair evaluation based on performance, survivability, flexibility and a number of other items."

We are doing that. We have done studies in regard to that and we will do that in development.

The radar that we are developing will fit and is designed to fit on either the C-18 or TR-1.

Once the committee spoke and gave us that guidance, it got a little muddled in conference.

JSTARS LANGUAGE

AUTHORIZATION CONFERENCE

The conferees are concerned that the Army and Air Force have not worked cooperatively to arrive at common requirements and specifications for the JSTARS radar and JTACMS missile to support the air/land battle concepts. The conferees direct the Secretary of Defense to ensure that the Army and Air Force resolve these matters at the earliest possible time.

APPROPRIATIONS CONFERENCE

The conferees agree that the C-18 aircraft may be utilized as the JSTARS testbed if the authorization committees concur, and if the Army, Air Force, and the Office of the Secretary of Defense jointly agree to such utilization.

First off, on the authorization side, although this does not talk to platforms specifically, it does take us a little to task, rightfully so, on the speed of our getting together, if you will.

We hope in this testimony this afternoon some of the concerns in the authorization conference in that area will be alleviated. However, the appropriations conference did talk to the platform. They said the C-18 could be the development platform, but kind of punted it back to a whole bunch of other people and that is basically what we have worked out over the last 3 months.

We are going to do both C-18 and look at the airborne processing facility and do the radar development on the TR-1.

JOINT STARS—PLATFORM ASSESSMENTS

OPERATIONAL COMMANDERS' POSITIONS

CINCEUR: An airborne platform with on board data processing is needed to meet USEUCOM theater requirements—18 May 83.

CINCPAC: "C-135 (707 equivalent)" is the AF platform needed to meet PACOM theater requirements—19 May 83.

CINCCENT: The C-18 is the AF platform needed to meet USCENTCOM theater requirements—26 May 83.

SERVICE CHIEFS' POSITIONS

Army and Air Force Chief of Staff: Jointly agreed position is that C-18 should be the Air Force platform—11 Jul. 83.

Now let us talk to the operational platform. One of the best places to go to find out what is the guidance is CINCEUR, General

Rogers, with his unilateral hat on. He didn't specify the platform, but he said he wanted onboard processing, that is what we needed.

That, as we discussed briefly, would drive us to 707 C-18 type airplane.

CINCPAC was more specific. He said 707, equivalent C-135. He wants that for a number of reasons.

One, he has a large theater to deal with and with a C-18 with onboard processing you don't get tethered to the ground with large processing immobility, but have a lot of mobility.

CINCENT was specific. General Wickham and General Gabriel have agreed the C-18 meets the Air Force operational platform needs.

[Chart deleted.]

Now, there is a valid question to date and we are looking at it hard as to the survivability of those platforms. Let me show you some basic conclusions we have come to with regard to survivability of either the C-18 or TR-1.

First off, there is no question, the Soviet or whomever we might be fighting, if determined, can get to these platforms. [Deleted.]

Defense suppression, blue air defense, AWACS warning will help platform survivability. We can orchestrate that in the way we deploy our forces. If you put a self-protection system on either platform, it will also enhance survivability.

The bottom line is that each platform, because of its unique characteristics, TR-1 being the type of airplane it is and C-18 being the type it is, their inherent characteristics present a different set of rules and a different set of pluses and minuses.

Our conclusion at this stage of the game with our data is that the two platforms are a bit of a wash, basically a wash, in terms of vulnerability.

Senator GOLDWATER. General, around the first of February Congressmen Price and Boland wrote a letter to the Air Force, to the Army, or to both, relative to the C-18 and the TR-1.

Do you recall that letter?

General RUSS. Yes, sir.

Senator GOLDWATER. Didn't they recommend the TR-1?

General RUSS. They recommended the radar be tested on the TR-1.

They also gave the Air Force permission to test the ground station portions or the processing capability on board the C-18 and to allow us to put the power and cooling, if you will, those sorts of things on the C-18 so that at a later point in time we could modify the C-18 with the radar should that be decided by the Air Force and concurred in by Congress.

Senator GOLDWATER. Let me ask you a technical type question. You want to cover about [deleted] to the rear from the airplane. What is the diameter of the radar antenna?

General RUSS. I don't know, sir.

Senator GOLDWATER. Wouldn't that require quite a modification to the TR-1 to accommodate the radar antenna at least [deleted] in diameter in the nose section where the C-18 might require some modification, but not as much as the TR-1?

General RUSS. There is no doubt about it, it is much easier to put a radar in the C-18 than it is in the TR-1. The C-18 has lots of space in it, lots of room for cooling, lots of room for wires and all the other things that go along with the radar.

But I must say the radar we are going to put in the TR-1 is going to be small, not only for the TR-1, but also so that it will fit on the OV-1.

So, we are already constrained to a size. It is the other things that go along with the radar that make it easier to put it in a C-18 such as power supply, that sort of thing.

Senator GOLDWATER. Now the OV-1 had the side looking infrared radar.

Am I not right on that?

General WAGNER. Yes, sir.

Senator GOLDWATER. That is being adapted to the C-18?

General WAGNER. That is the SLAR. We will replace that with the JSTARS, sir. It will be in the same size package, 11 to 11½ feet long to put in the OV-1.

Senator GOLDWATER. It will fit under the fuselage?

General WAGNER. Yes, sir. It will be about the same size package as the current SLAR.

Senator GOLDWATER. Do you Army people find that side-looking radar very, very valuable?

General WAGNER. We find it valuable, sir, but it does not give us the [deleted] that we need today that we are looking for in the JSTARS.

Senator GOLDWATER. Any questions?

Senator BINGAMAN. Could I ask about the ground stations for this radar and how that impacts on the choice of platform?

General GORTON. First, in a broad sense if you put it in a TR-1, it has no onboard processing data capability. This ground station has to have a rather large size capability to process the data to pump it around the system to use.

That is a large ground station. It would preferably be hardened and it would be a limited number, [deleted].

The difference in the C-18, the processing capability is not tethered to a large ground station and will be able to put processed, usable data down to any number of ground stations.

That is the Air Force side of the picture on ground basing.

As far as the Army side of the picture, a greater number of ground stations.

PLANES EQUIPPED WITH JSTARS

Senator BINGAMAN. How many planes are we talking about being equipped with JSTARS?

General GORTON. At the present time as far as the Air Force goes, it would depend on the type of platform you chose, although the orbit time of both the C-18 or TR-1 is both the same, [deleted].

Let me give you an example from our experience on the AWACS. It takes about [deleted] aircraft to support one 24-hour orbit AWACS.

We would be doing about the same thing for a C-18 and will be doing the same mission.

As far as the OV-1 requirement, and I think I should caveat both these statements, we have an RFP we are going to get out here in the next couple days or week or so. We have a lot of feedback from the contractors and final capability of the radar will also impact on how many platform are needed.

General **Wagner**. We are looking at [deleted].

General **Russ**. We don't know how many we would have, but if you used the rule of thumb of [deleted] per orbit and if you assume it takes [deleted] orbits to cover Central Europe, then we are talking [deleted] for Europe plus some spares plus some training airplanes.

So, I would surmise [deleted] would be the number. That will only provide you European capability.

If you want a capability in addition to that to be able to go other places in the world, you either will have to draw down the European capability or you will have to buy a few more airplanes to give you the flexibility to go to other theaters.

Senator **Kennedy**. You indicated on this chart the [deleted].

What is your practical assessment as to the survivability of either one of these platforms in the case of conflict in Central Europe?

General **Gorton**. First and foremost, it is part of a total system. AWACS will be operating, a number of things will be operating giving us a threat warning.

We feel fairly confident that the platforms will survive. It is a complex structure we are going to go against and we have to plan to suppress the [deleted].

There are a lot of things that are vulnerable back there. We have to put a hard core press on the [deleted]. We are building the systems to do that. We think the joint STAR aircraft will be survivable.

I think the point of that statement is that in a [deleted]. If we can get warning, it will increase their survivability, but it is pretty much the same as any platform operating in that area.

You have to have full warning and be able to maneuver.

Senator **Kennedy**. It will take at least some kind of effort to knock out other kind of systems?

General **Russ**. Yes, sir.

General Gorton brings up a good point. We need as a high priority to knock out the [deleted] early in the war because of their [deleted]. There will be a lot of airplanes in the air in Central Europe. This will be one of those airplanes.

We will do things to protect it. In other words, we will provide F-15's or some sort of interceptors to protect it from the air-to-air fleet, but no defense is 100 percent. We need to be up front, recognizing that if we have a system like this and it has as high a payoff as we think it will have, then it is certainly going to be a target for the enemy and, therefore, we need to be sure that we are taking all the precautions that we can to be able to protect it, whether it is through active protection or whether it is through ECM systems or what have you.

Senator **Kennedy**. What is your principal weapon against [deleted]? What is the weapon system which you rely on to take out those [deleted]?

General GORTON. Our principal SAM killer is F-4G with the Harm missile. There are a number of other programs, some of which——

General RUSS. I think Senator Kennedy's question is which system are you going to use primarily to defend. The aircraft that we would use to defend the C-18 is the F-15. They are stationed at Bitsburg right in Central Europe within 3 or 4 minutes from the airplane.

The thing is that we would have airborne airplanes of the F-15 type protecting the AWACS airplane which is in similar orbits in Central Europe.

So, we already have a system designed to do that. We would just insure that whatever platform we have is also included in that umbrella.

COST DIFFERENCE BETWEEN TR-1 AND C-18

Senator DIXON. General Gorton, is there a substantial difference in cost between the TR-1 and the C-18? I would assume the C-18 is more expensive.

General GORTON. No. If you are going to go out and procure a new TR-1 platform, and we don't have a firm figure on what a new one would cost today if we went under contract, but somewhere in the neighborhood of $30 million. That is approximate.

General RUSS. I looked it up yesterday, Bill. We are paying right now for the TR-1's we are buying about $23 million a copy.

Senator DIXON. And for the C-18?

General RUSS. We just bought some last year for $3.5 million.

General GORTON. C-18's are 707's that are coming off the market now.

Senator DIXON. I understand you to be saying that you are buying TR-1's for $23 million and C-18 for $3.5 million.

My next question is why the TR-1? From what has been said, it would indicate to me the C-18 is a much superior aircraft in connection with the platform.

I am saying that as a lay person here, new on the subcommittee. I am certainly overwhelmed by that view.

General RUSS. That is one of the factors that lead to the determination of our CINC's that they thought C-18 is a better platform.

It is readily available. We know we can put it in service and it is cheaper. But to be honest with you, it is more difficult [deleted] for the C-18 than it is for the TR-1.

We have one already developed for the TR-1. We really don't have a complete one for the C-18. So, there are other factors involved.

I don't know what the final cost will be after you have integrated everything. My judgment is that it would be cheaper to do it on the C-18, but I can't swear to that because I have not pursued all the——

Senator DIXON. How many of each are we purchasing in the current year's contemplated appropriation?

General RUSS. I think this year's budget request contains three TR-1's.

Senator DIXON. And how many C-18's?

General Russ. It does not contain any C-18's, but the C-18's are purchased not by securing them off the line, but by buying used airplanes.

Senator Dixon. And converting them?

General Russ. Converting the, yes, sir. We take airline seats out and put U.S. Air Force seats on the side and run it through an overhaul procedure and we use those.

General Gorton. Those three TR-1's that have been procured this year are not associated with this program. They are in support of other programs.

In terms of procurement of the ultimate joint STARS operational platform, there is no procurement for either one at this time. We don't have to make the decision right now. We are in the process of making the decision.

General Russ. Should the decision be made to use the TR-1 as a platform, we would have to make a production decision next year. These three we are buying this year will keep the line open until next year and we can make that decision next year.

General Gorton. You don't look only at the platform. You have to look at the total system. It is the operational concept in which you employ those systems that tend to drive the survivability more than anything else.

The total system is the ground station and the platform itself. We know from our intelligence one of the reactions to the Soviets understanding of how we are approaching JTACMS and JSTARS is to focus in on ground stations.

Senator Goldwater. What is the altitude capability of the [deleted].

General Gorton. It is well in excess of [deleted].

Senator Goldwater. What if they use a six or seven?

General Gorton. The orbit for the TR-1 or the C-18 is further back about [deleted] beyond the political border.

JOINT STARS—PROGRAM EXECUTION PLAN

Joint requirements established.
Time phased development plan.
Mode A—Moving target indicator.
Mode AB—Adds fixed target indicator.
Mode ABC—Adds weapons guidance.

Here is our plan of execution for the joint STARS program. I have already discussed the operational requirement. That front end work has been done. Here is our time-phased development plan.

We are looking at mode A to move the requirement of the U.S. Army. This is a radar identical to their radar, but basically MTI capability only. We get the IOC sooner and it meets the Army's requirement.

The next phase in the development will be to add to the fixed target indicators and finally a weapon guidance capability. Basically the same radar upgraded, but the program structured to meet the urgent requirements of the U.S. Army for an early IOC.

[Chart deleted.]

Here is our game plan as far as our schedule. We hope to release the RFP in the next couple of weeks, award contract in August of this year and develop a mode A capability in the [deleted] general area timeframe for IOC for initial Army capability, and to get the full capability necessary for weapons of [deleted].

MODE A CAPABILITY

Senator **Bingaman**. I would be interested in knowing what is Mode A capability. Is it a usable system?

General **Gorton**. Yes, sir. It meets the Army requirement.

One of the things we have been pressing forward on this program is a rather critical requirement to get the Army at least an [deleted] as early as possible. That is the easiest thing to do in this system and we hope to be able to do that to meet [deleted] to get the initial capability in the Mohawk.

It will be followed by fullup capability, not only the Air Force platform, but the Army platform.

Senator **Bingaman**. The Air Force would not be able to use this until [deleted] according to your projection; is that right?

General **Gorton**. The fullup capability will not be available for the Air Force until [deleted]. Keep in mind once you have the capability out in the field that we do have increased intelligence information already that will be passed among observers.

So, it is a step by step with particular emphasis on meeting the needed Army operational capability.

General **Wagner**. We developed this technique, fielding it so that the Army could get that moving target indicator over a wide area. We were willing to go along with things the Air Force wanted.

They were willing to go along with this early capability for us because it is so essential.

General **Gorton**. As far as I am concerned, the first step is to be able to do something that is very critical right now, to effectively use our artillery and our MLRS which is going into the field, to effectively use those limited resources against a large target array and shoot smart and that is what that Mohawk will do.

General **Merryman**. To give you an idea how important it is to get the MTI capability in the field—without something like this, we don't see much better than we did in World War II, as far as the Army looking forward in our forward area.

We have a couple of experimental platforms in Europe that we have been flying for some time that have an MTI capability. What we found is that the unit has those working for it always whips the units that don't have it. It is that important.

Senator **Goldwater**. Do we have any targeting capability now?

General **Gorton**. We do. We are bringing in a SLAR that will give us at least some targeting capability. We have manned reconnaissance, [deleted] all of them have their own ability or limitation.

There is no moving target indication except a limited capability on the Army's part and our part.

General **Wagner**. We have some of the SLAR capability, but the [deleted].

We have interim SOTAS over there, but they are [deleted].

Senator **Goldwater**. About 50 percent of the time you have under 1,500-foot ceilings?

General **Wagner**. Yes, sir.

Senator **Goldwater**. Very, very poor visibility?

General **Wagner**. Yes.

Senator **Goldwater**. Unless your aircraft can be approximately over them, you are not going to see them?

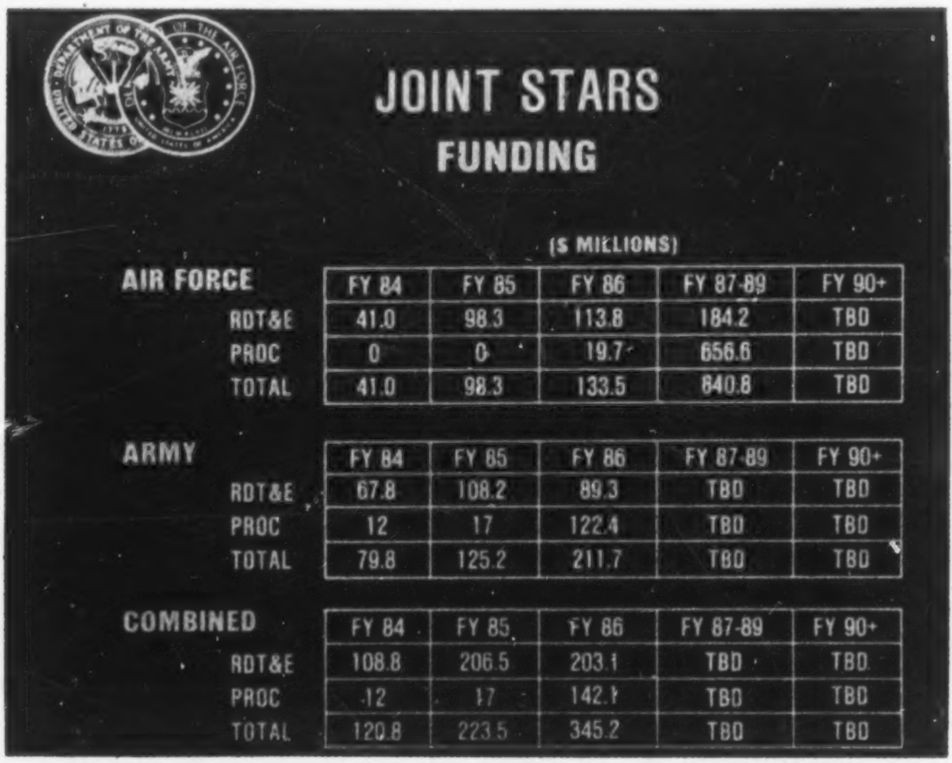
General **Wagner**. That is right.

Senator **Goldwater**. So, you [deleted].

General **Wagner**. That is right.

General **Russ**. We also are fielding in the [deleted] timeframe the precision location strike system [PLSS] which will locate any of the vehicles or any of the systems that are radiating, but it depends on an emission of some sort like a radar or some sort of signal. It will do half the battle, but it won't do the other half.

General **Wagner**. The Army is looking into it to get the information from their PLSS system because we believe that can be a guide to us and we can link it into our intelligence systems so that we can use it, too.



JOINT STARS

FUNDING

($ MILLIONS)

AIR FORCE	FY 84	FY 85	FY 86	FY 87-89	FY 90+
RDT&E	41.0	98.3	113.8	184.2	TBD
PROC	0	0	19.7	656.6	TBD
TOTAL	41.0	98.3	133.5	840.8	TBD

ARMY	FY 84	FY 85	FY 86	FY 87-89	FY 90+
RDT&E	67.8	108.2	89.3	TBD	TBD
PROC	12	17	122.4	TBD	TBD
TOTAL	79.8	125.2	211.7	TBD	TBD

COMBINED	FY 84	FY 85	FY 86	FY 87-89	FY 90+
RDT&E	108.8	206.5	203.1	TBD	TBD
PROC	12	17	142.1	TBD	TBD
TOTAL	120.8	223.5	345.2	TBD	TBD

General **Gorton**. The funding profile for the Air Force, although we show rather extensive dollar values in terms of RDT&E and procurement, both the Army and Air Force, and total is about $2.2 billion.

Until we get response to the RFP on the street and get the contractual responses negotiated and have a firm contract in our hands, obviously these figures are our best judgment at this time and they will clearly change once we get a negotiated contract with the development of the system and follow on with procurement of it.

That is what is in the budget today. That is what is in the President's request.

This summarizes the presentation on joint STARS. We have the joint requirement and as we said early on, that is the start, that is what you need in the front end. We feel very comfortable with it.

We are ready to go out with the RFP and we are ready to produce.

Before I introduce General Wagner, I will take any further questions.

The next program, JTACMS, while related to joint STARS, both these programs have a high degree of operational efficiency by themselves. That is to say you don't have to bring them along at the same time, the same IOC.

JTACMS will work with a number of systems and independently whereas joint STARS does not have to have a JTACMS in order to direct aircraft to the target.

If there are no further questions, Mr. Chairman, I will turn it over to Major General Wagner.

Senator NUNN. Are you talking just on JSTARS?

General GORTON. Yes, sir. The next session will be on JTACMS.

Senator NUNN. May I ask one question here, Mr. Chairman?

Senator GOLDWATER. Go ahead.

Senator NUNN. How does this relate to what we call the joint fusion program?

You talk about joint receiving stations. I haven't seen anything mentioned about joint fusion.

Isn't that an integral part of the system?

General GORTON. Joint fusion is combining of two critical capabilities of the Army and Air Force. The joint fusion is to take intelligence information and process that information from all sources, both Army, Air Force, and any others, and to provide that information in two general channels.

One, to allow for planning for tomorrow's battle and in some cases real time in getting it down to the user so that he can shoot or scoot, whatever is needed.

JTACMS is going to attack the target developed through the process of joint TAC fusion.

As you well know, we are getting a lot of systems out that will provide part of the information to us in various characters, [deleted].

Senator NUNN. Where are you on joint fusion?

General GORTON. In fact, we are going to have a general officer review on that program in the next couple weeks. It is adequately funded basically for both the Army and the Air Force.

The Air Force request is for about [deleted]. I can't comment specifically with JSTARS, but in general we are working joint STARS and JTACMS.

We have a joint group together and joint leadership.

Senator NUNN. It sounds to me like you are much further along with JSTARS than you were joint TAC fusion.

General WAGNER. The joint TAC program is well along. We will start fielding our first sets in [deleted]. That is a limited capability. This is an evolutionary development program we add additional segments to it so it does more and more to assist the Commander and improve it. It will be about [deleted] before we have the ultimate system we desire, but we will put the first systems out there starting in [deleted].

Senator **Nunn**. Your JSTARS information will be able to be processed and be useful before you get joint fusion or will you have to have joint fusion to make joint STARS full operable?

General **Wagner**. If you look at the planning function and try to make a coherent picture of what is going to happen [deleted] hours from now, JSTARS will provide that data to fusion. JSTARS will provide real time intelligence information to the sensors of the Army attack aircraft.

Senator **Nunn**. You mean if you don't get joint fusion, you will be able——

General **Wagner**. Yes, sir.

Senator **Nunn**. JSTARS is not dependent on the joint fusion?

General **Wagner**. That is correct.

Senator **Nunn**. It will be part of joint fusion?

General **Wagner**. Yes, sir.

The Army is emphatic we will not send all the information only to joint TAC fusion. It will go through two channels, go to the Commander so if he wants to use it for an immediate attack, he can.

It will also go to the joint TAC fusion to develop the entire intelligence picture.

Senator **Nunn**. Thank you.

Senator **Dixon**. General Gorton, I understood you to say a while ago in the closing part of your remarks that this would all be done by a negotiated purchase ultimately. Is that right?

General **Gorton**. That is correct.

Senator **Dixon**. You send out the plans to a variety of contractors and others then ultimately you select the particular one you think best fits the plan you have in mind?

General **Gorton**. It will be competitive. We will select a contractor and negotiate the final details.

Senator **Dixon**. It won't lead to competitive bidding?

General **Gorton**. The request for proposal is out there for anybody to bid on. Then we will evaluate the responses. We already know generally there are a number of people out there that are working hard to come in with resources and they are waiting.

But there could be somebody come out of left field. It is unlikely in this case because it is a complex system.

There are a number of contractors and we will compete those.

General **Russ**. We already have five contractors who have done preliminary work in this area and are working on other types of radars similar to this. I believe all five of those contractors will bid when we send out our request for proposal.

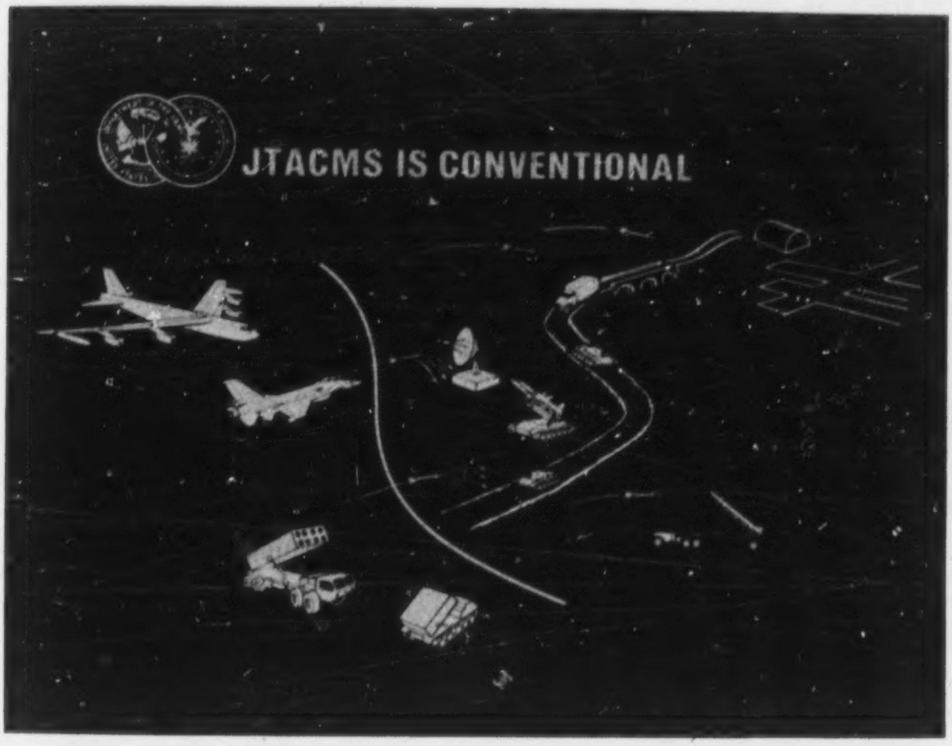
Then we will run a source selection and pick one of those contractors. It will be in a competitive environment. We hope we will be able to get the best of the proposals when we do it.

Senator **Dixon**. I thank the Chair.

General **Gorton**. Maj. Gen. Lou Wagner will talk about JTACMS.

Senator **Goldwater**. Thank you, General. You did a good job. In fact, we are getting so used to all of you over here that if you send anybody else, we are not going to let them in.

General WAGNER. Mr. Chairman, today we are going to discuss in detail a program of major interest to the Army.



You saw this when General Merryman pointed out to you what the threat is. JTACMS is a conventional weapon. We are looking at it as a capability for the corps commander to attack those targets out there that he cannot attack with artillery or the other means that he has today, such as MLRS.

It will go after key targets beyond the current capability, such as air defense capabilities. [Deleted.]

It may even be used on airfields if they happen to be the right kind of targets. A very good target would be [deleted].

Senator NUNN. That chart indicates, and you said very strongly, it is a conventional weapon.

You realize there are stories that got out last year that you were developing a nuclear warhead for JTACMS. This was contrary to everything we have been told for the last 2½ to 3 years and really violates the whole concept of what the SACEUR has been talking about all over Europe, moving away from the early use of nuclear weapons in Europe.

If it is conventional, where did the story come from and what is the status of the nuclear warhead?

General WAGNER. It is a conventional weapon. Those stories I believe came out last year because eventually if we are to maintain in Europe the Lance nuclear capability we have today, we will probably have to [deleted].

At the present time we do not plan on having a capability for this one that would be nuclear. We would keep in the inventory some of our battalions of Lance with [deleted].

At the present time the SACEUR also does not want to give up that nuclear capability he has with Lance.

The one we are designing does not have a conventional capability.

Senator Nunn. Does it have a nuclear capability?

General Wagner. It does not have any nuclear capability. That is not to say if in the future at some time we have decided we need a nuclear capability, a warhead could not be designed, but there are no dollars and there is no design work being done today to give it a nuclear capability.

Senator Nunn. Does anybody else want to give background on that as to where the nuclear warhead idea came from?

General Merryman. The way he described it is correct. You have 4 battalions of Lance in Europe that are nuclear and 11 that are conventional.

Somewhere downstream we may have to come back to you and say we would like to do that, but today the program consists of nothing nuclear. It is totally conventional.

Senator Nunn. How about DOE? Are you speaking for DOE, too? Are they doing any design work on nuclear weapons for JTACMS?

General Gorton. I am not aware of that. I am sitting on the MLC and I would be aware of that if that were the case.

General Russ. Senator, that would be highly unlikely. The reason would be because we don't know exactly how big the JTACMS is going to be and what the parameters are exactly yet.

The nuclear community needs all of that information before they can design a nuclear weapon.

Senator Nunn. Your answer is that you have no present plans for a nuclear warhead, you reserve the right to ask for one in the future; is that right?

General Merryman. Yes, sir.

General Russ. I might say the Air Force has no plans for a nuclear warhead and has no plans to ask for one in the future.

General Merryman. Let me make sure you got the Army, too. The Army has no plans at present to ask for one in the future, sir, but we do not want to mislead you by saying we never will, because someday somebody may say we need to get rid of all the Lances.

If you want to keep the same nuclear capability, we have to come back to you and say we will have to do it with this.

Senator Nunn. The problem is designing a system and you are spending $12 or $15 billion, or whatever it is going to be, so that you can avoid early use of nuclear weapons.

If that system has a nuclear warhead, as soon as you start buying that thing, basically you are going to have people on the other side assume that it is either nuclear or about to go nuclear and you are going to have preemption. You may have it anyway.

You are not going to able to see this program if it goes nuclear or there is any kind of nuclear thing.

I am not against nuclear weapons in Europe. I think until we get conventional capability, they are essential.

A program is being sold on moving away from early use of nuclear weapons. You cannot mix those two up. If you do, it is gone.

General Wagner. The only reason we would ask for a nuclear warhead in the future is if Europe came in and said, "We have to have that capability and the Lance is no longer capable of giving the number of nuclear weapons it should."

We have no plans now because we are designing conventional warheads.

NUCLEAR TIPPED ROCKETS

Senator **Goldwater**. General, before you leave that, let me ask the Air Force, do you have any nuclear tipped rockets over there?

General **Russ**. The only nuclear capability we have in Europe in missile sort of thing is the GLCM that we have now in place.

The other nuclear weapons we have in Europe are the free-fall bombs that we drop from airplanes. We have no nuclear tipped missiles.

Senator **Goldwater**. The tactical air advantage hasn't changed much over the years. I remember war gaming where it was clearly demonstrated that if the Soviets in their initial attack on our air bases with nuclear tipped rockets carried by tactical aircraft and if we didn't retaliate with nuclear tipped weapons, we would be out of the war within 2 or 3 days.

General **Russ**. I think that is a fair evaluation.

Senator **Goldwater**. I think that would still hold.

General **Russ**. Yes, sir. That is why we have airplanes sitting day in and day out alert with nuclear weapons onboard. That is why we have introduced ground-launched cruise missiles into the inventory.

Senator **Goldwater**. That is about a 3-inch rocket?

General **Russ**. GLCM weighs about over 2,000 pounds.

Senator **Goldwater**. That is about an 8- or 9-inch one.

Senator **Nunn**. General Rogers said he wants to move away from early use of nuclear weapons.

My understanding of that is by that he means in response to a conventional attack. He does not mean that we would not have early use of nuclear weapons if we were attacked with nuclear weapons.

General **Russ**. That is right. He wants to raise the threshold.

Senator **Nunn**. What you are talking about with this system here is to be able to keep it conventional from our point of view unless the enemy goes nuclear?

General **Russ**. Yes, sir.

General **Wagner**. There are also six Lance battalions over there now. We would have to leave a portion of those in place to take care of the nuclear problem.

In all of our analyses to date, and if you remember what General Gorton said, that the enemy commits generally to the attack at about [deleted]. We have not found that there is a high cost-effective payoff for attempting to destroy tanks at ranges like [deleted]. When we do that, they have time to react by another means and still close on the main battle area very quickly.

Also if they are not destroyed, only damaged, they can repair them. If you are going to hit maneuver elements, our study today shows you will have to hit at ranges less than [deleted].

Senator **Goldwater**. One other point and I ask these questions only so that our colleagues might have a little better understanding of what we are talking about.

There will be no such thing as a surprise war. It is not going to start at 1 o'clock without our knowing about it.

So, we have the advantage of several days to observe the buildup. That is your first indication. You are talking about the type of attack that we know that they plan to use. You are talking about a buildup that will be perfectly obvious from any kind of forward observation.

I am talking about Army division size. Once you know that, you have a pretty good concept of what you are going to begin looking for.

Isn't that right?

General WAGNER. Yes, sir, that is correct. It is obvious that he could cut our warning sign if he happens to stage his attack in conjunction with a major maneuver, which we think he would probably do because that would be a smart time to do it.

We constantly track those and are on extra alert during those periods, so we feel we can react to them.

Senator GOLDWATER. So that the AWACS would be a very important part of the whole initial maneuver.

It could almost spell the difference between victory and defeat of our forces.

General RUSS. Yes, sir, and so would the JSTARS platform.

Senator GOLDWATER. Yes; the whole concept of forward looking radar, indepth radar, the looking far enough ahead so that you can say there are a lot of trucks and tanks out there and an awful lot of equipment, they have to be doing something and we can get ready for it.

General WAGNER. [Deleted] will even give us more warning of that so they are all tied together to give us that warning.

JTACMS LANGUAGE

SASC:

> "Although congressional direction in the past has encouraged the development of a common weapon for both services it is not clear that this goal is achievable. A configuration optimized for one service may be less than satisfactory to the other."
>
> "The committee believes that better solutions are available. At a minimum, every effort should be made to achieve commonality of componentry wherever practicable, but the greater emphasis should be placed on developing weapons that are both effective and affordable."

I would like to call to your attention some of the language we have been working on this year. The language that we received from your committee last year initially, we believe we can live with, with no difficulty.

As you remember, you pointed out we should strive for maximum commonality—maybe it was not smart to go with the exact system.

HASC:

> ". . . The authorization of $50.16 million is available for the Army only for the selection of either the Patriot T-16 or Lance T-22 as the delivery vehicle for terminally guided or sensor-fuzed submunitions for the Army and Air Force deep strike missions."

AUTH. CONF.:

"The Senate conferees agreed to the language contained in the House amendment restricting the expenditure of $50.16 million in the Army JTACMS program to the evaluation and selection of either the T-16 (Patriot) or T-22 (Lance)."

"The conferees further agreed that the Air Force JTACMS program shall concentrate on the development of a common missile or a derivative of the missile jointly selected by the Army and Air Force. This is not intended to preclude consideration of other candidate vehicles under development in other programs."

However, the House was very definite in dealing with the Army when they said you will select a Patriot T-16 or Lance T-22 as the delivery vehicle.

During the conference, your committee went along with that, so a majority of our analyses this year have quite obviously been directed for the T-16 and T-22.

Many of our analyses, however, have not shown that is the best way to go, also that it will be a lot quicker to go that way.

Senator GOLDWATER. I just want to point out I was in the hospital when that conference was held. I would have rather been over there.

General WAGNER. However, they did agree that the Air Force would not have to go along with that T-16 or T-22 and could look at other approaches and they are doing that today.

I point out at this time the Army has not ruled out other systems. As we work with the Air Force, we have not ruled out cruise missiles or any other systems to give us the capability we need out there.

The SAC [Senate Appropriations Committee] encourages our Department to continue to make JTACMS. Some of the submunitions are in our NATO program because they come out of our MLRS program.

Senator GOLDWATER. You would almost have to work with NATO to make this concept workable.

General WAGNER. That is true, sir. Particularly in Command and Control, it is a joint battle over there. We are going to have to fight it that way from day one.

[Chart deleted.]

Now, where do we stand on our requirements today?

On the left you will see the Air Force requirements. They worked very hard on that this year. One of the major changes they have made is bringing in the tactical Air Force as well as SAC for the use of this particular weapon.

They are looking at a [deleted] range for the system to do the job out there.

Looking at a number of warheads, unitary and some submunition warheads, about a thousand pounds. That is the same size warhead the Army is looking for. Accuracy, at this point they are asking for a little more than the Army is, about a [deleted] capability. They need this they believe with their unitary warhead if they go after hard C^3 installations.

They are looking for maximum weight of 3,300, a maximum length of 232 inches to be used on a number of aircraft. The Army is still determining our range. We think it should be greater than [deleted] we can use our MLRS system that we have today with minor modification and terminally guided submunitions to do the same job.

However, the range beyond the forward line of troops will be probably around 100 to 125, our studies show us now. It may go out farther than that.

We are looking at several warheads, APAM which is antipersonnel, antimaterial warhead, we would like a thousand pounds, looking for accuracy of [deleted].

When I say that the weight and the length depend on the launcher, that is true. We can take weights on various launchers we are looking at today from below 3,000 pounds to over 5,000 pounds.

The most logical ones, so that we can put more in the launcher, appear to be what the Air Force desires, about 3,300 pounds. The length, if we are to put it on either our wheeled vehicle we have out there today or fighting vehicle system derivative, would have to be on more than 208 inches unless we extended those vehicles.

That minor differences between the 232 and 208 we believe we can work out with the Air Force.

When we look at the IOC, the Air Force is asking for [deleted]. We say "To be determined." I will talk about that a little bit later.

JTACMS—COMMONALITY POTENTIAL

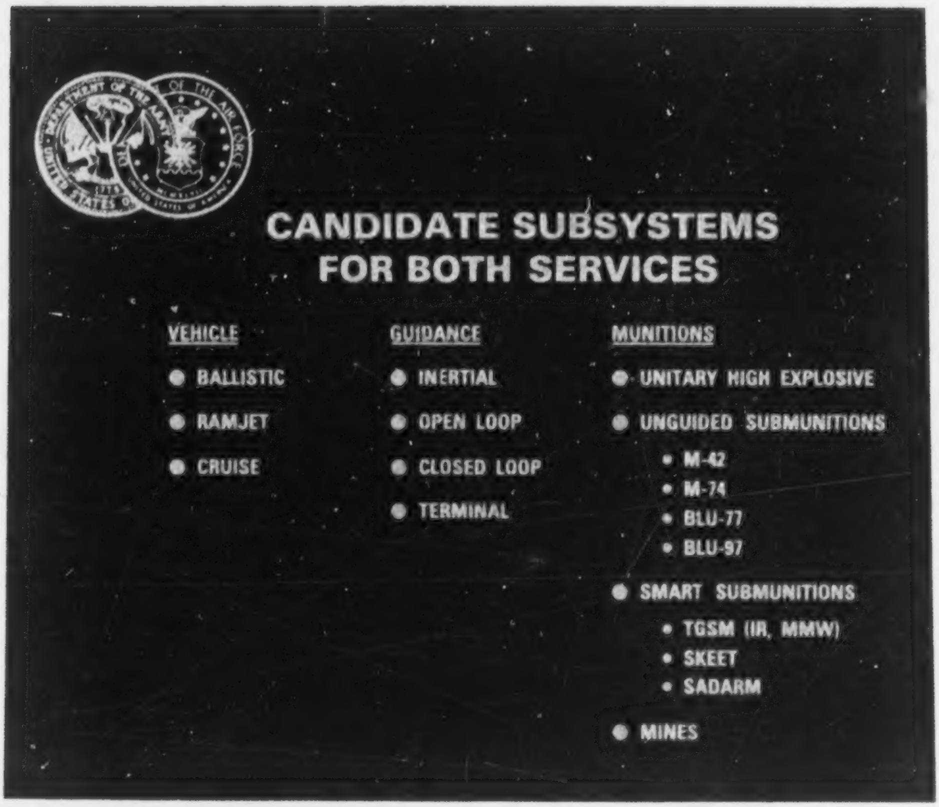
Warhead development.
Munitions.
Terminal guidance.
Target acquisition systems.
Missile guidance.
Weapons interface unit (joint STARS).

We are looking closely at commonality. These are the key areas where we think we can have commonality, even if it is not exactly the same system, in the warhead development with munitions and terminal guidance of that warhead.

The target acquisition systems, we use the Air Force systems. We use the NAT systems and we will use JSTARS. So, we are using common systems to determine what we are going to shoot at out there.

Missile guidance, we agree completely that there are a number of systems and we can probably agree on one of those systems.

Finally, the weapons interface with JSTARS will have a common data link. They may have a ground station in the air, we may have it on the ground, but they will talk to each other—that is the key thing—so that we can pass information.



CANDIDATE SUBSYSTEMS FOR BOTH SERVICES

VEHICLE

- BALLISTIC
- RAMJET
- CRUISE

GUIDANCE

- INERTIAL
- OPEN LOOP
- CLOSED LOOP
- TERMINAL

MUNITIONS

- UNITARY HIGH EXPLOSIVE
- UNGUIDED SUBMUNITIONS
  - M-42
  - M-74
  - BLU-77
  - BLU-97
- SMART SUBMUNITIONS
  - TGSM (IR, MMW)
  - SKEET
  - SADARM
- MINES

Now, getting very specific, we are looking at the detail you see here. For example, we are looking at ballistic missiles, ramjets, and cruise missiles to do that job.

As I said, we have not ruled out either of those if they will do the job for us.

In the guidance area we are looking at inertial open and closed loop, and terminal guidance. We may not need all of those, but we are sure we can come to an accommodation on that.

Senator GOLDWATER. Why have you eliminated IR television?

General WAGNER. The principal means we are looking at right now would be [deleted]. The fall-back from that would be IR techniques.

The terminal guidance has a man in the loop so that he can look through the [deleted] not necessarily by a television, but he can use IR capability or millimeter wave to have that man look down there.

In the munitions, unitary high explosive is primarily today a requirement of the Air Force. That won't have any effect on the system because that is the front end.

In the unguided submunitions we are looking at the mixture you see here, M-42 through 97 are what we call multitype munitions. It is a small shaped charge.

Modification of the M-42 is a submunition that we have in the MLRS today.

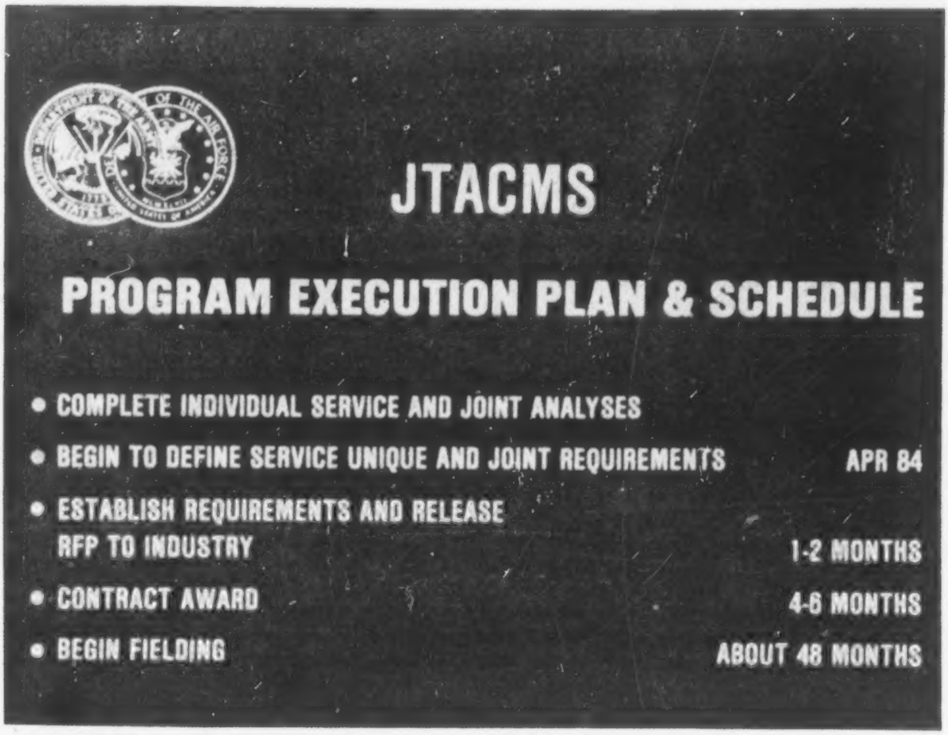
APAM, or antipersonnel, antimaterial, which doesn't have [deleted].

In the smart munitions we are looking at a number of approaches, terminally guided submunitions, SKEET Air Force development and SADARM which is an Army development.

We might also look at a mine capability. This would probably be the Gator mine. The mine itself has been developed for the Air Force by the Army to dispense by the Air Force.

We are going to use the same mine in our mine dispensers from helicopters

There are a lot of common areas that we believe we can get together on to put these pieces into this system so that it is a common system.



JTACMS

PROGRAM EXECUTION PLAN & SCHEDULE

• COMPLETE INDIVIDUAL SERVICE AND JOINT ANALYSES	
• BEGIN TO DEFINE SERVICE UNIQUE AND JOINT REQUIREMENTS	APR 84
• ESTABLISH REQUIREMENTS AND RELEASE RFP TO INDUSTRY	1-2 MONTHS
• CONTRACT AWARD	4-6 MONTHS
• BEGIN FIELDING	ABOUT 48 MONTHS

Our program execution plan is laid out here. I would like to point out on the first what we are doing. There are some major things going on in the services today.

First of all, under the direction of the Chief of Staff of the Air Force and Chief of Staff of the Army there is a joint force development study going on.

What General Gabriel and General Wickham decided was that the Army and the Air Force cannot affort to duplicate the same capability. They turned on this group of thinkers in the Army and Air Force and gave them free reign. There are no restrictions on what they are recommending.

Today they are working with General Mahaffey and General Chain, the operators of the Army and the Air Force, and will be presenting within the next month to the Chief of Staff some of the recommendations they make.

They are looking across the entire gamut, not just on these particular weapons.

Senator GOLDWATER. Do you think you will have agreement by fall?

General **Wagner**. We will have agreement by fall on what our requirements are, I believe, and what that program should be. I will show you what that schedule is a little bit later.

There are certain things that this group is recommending and that we will have immediate agreement on as to who will attack certain targets out there, how do we control battlefield interdiction.

They are looking at the entire picture.

We are also continuing a very rigorous analysis in the Army to determine what is the highest payoff in range, in warhead, in the size of the missile and in the type of system to do the job out there.

Our next meeting with the Vice Chief of Staff of the Army and the other leadership is on March 30. We hope at that time we can firm up our requirements are and start working with the Air Force on that. When we do that, we are going to get together with the Air Force. We think it will take us about 2 months to iron out the requirements like we did on JSTARS.

We will give some, the Air Force will give some to come up with a system that will do the job.

Finally, after we establish those requirements, we will go out with a RFP to industry. It will take about 2 months to answer that. We would hope to get out a contract award 4 to 6 months after that.

If you add up all those times, you are getting down to the September-October timeframe. I would say that is probably optimistic, but we want to make sure we do it right.

We believe the development program will be about 4 years.

AIR-LAND BATTLE—DEEP ATTACK PROGRAMS OFFICE

Purpose:

To synchronize and integrate Army efforts to improve capability to execute deep attack pursuant to airland battle doctrine.

Deliverables:

A capstone deep attack operational concept.
Coherent doctrine, organization and materiel programs to support deep attack.

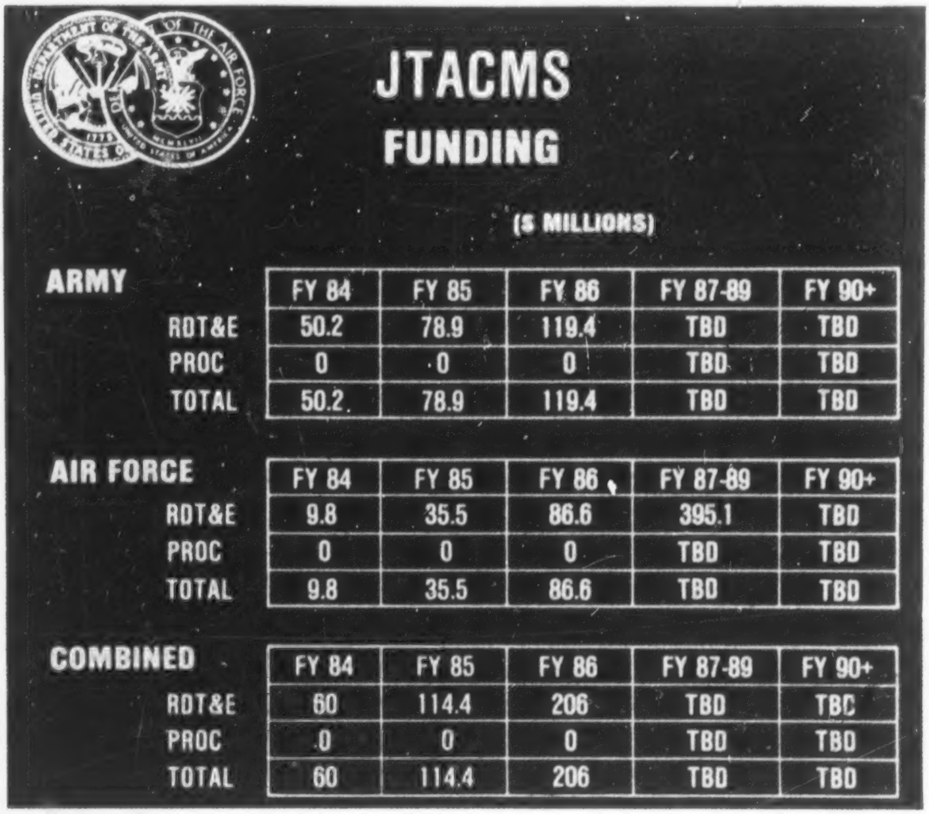
In the Army, and this sort of answers the question you brought up, Senator Nunn, we have established an air-land battle deep attack programs office. When we started looking at all our programs in the Army, the JTACMS, the JSTARS, the joint tactical fusion program, all of our communications programs, how do we work with the Air Force, we discovered that in many cases they were going along independent lines instead of all being tied together in a synergistic manner.

So, the Vice Chief of Staff selected whom he believed was the smartest individual in the Army to head up this group, has given him a free reign to select whom he wants and has given him 16 to 18 months to take all of these systems that will work together to orchestrate on the battlefield to make sure they have command and control ability, to make sure that the intelligence is properly integrated in the targeting and into all the sensors we have out there.

We feel that is going to pull together for us a coherent doctrine, organize and program to do that job out on the battlefield.

We have been remiss for not doing this long ago, but we are correcting that now and we think we will have a higher payoff in this particular area.

All of these systems must work together if we are really going to have the payoff we need on the battlefield.



JTACMS
FUNDING

($ MILLIONS)

ARMY

	FY 84	FY 85	FY 86	FY 87-89	FY 90+
RDT&E	50.2	78.9	119.4	TBD	TBD
PROC	0	0	0	TBD	TBD
TOTAL	50.2	78.9	119.4	TBD	TBD

AIR FORCE

	FY 84	FY 85	FY 86	FY 87-89	FY 90+
RDT&E	9.8	35.5	86.6	395.1	TBD
PROC	0	0	0	TBD	TBD
TOTAL	9.8	35.5	86.6	TBD	TBD

COMBINED

	FY 84	FY 85	FY 86	FY 87-89	FY 90+
RDT&E	60	114.4	206	TBD	TBD
PROC	0	0	0	TBD	TBD
TOTAL	60	114.4	206	TBD	TBD

This is our funding. I would put the same caveats on this that General Gorton put on his. We don't have contracts yet. We believe these are the best estimates of the dollars that will be needed in 1984, 1985, and 1986 under the programs we have laid out today.

As we definitize those contracts, those dollars may change some. If they do, we will either have extra dollars available, which is probably unlikely, or we will have to come back for reprograming and then we can put in the additional dollars in the outyears, both in RDT&E and in procurement to field these systems at the earliest possible time.

In summary, I would say that to many people what we have done this year seems slow. We feel that if we had not taken the course we have taken today and really analyzed the problem, we would be wasting the dollars of the Government and we wouldn't get what we really wanted.

We are working hard with the Air Force and we believe we can come up with a joint program.

COORDINATING THE BATTLE

Joint force commander sets force objectives and the campaign plan.
Land and air component commanders coordinate and execute plans.
Coordination process continues down to individual units.
Success depends on:
Joint interface—managing the information flow.
Efficiently matching weapons to targets.
Joint attack of the second echelon [J-SAK].
Joint suppression of enemy air defenses [JSEAD].

This sort of ties together everything we have been talking to you about today. It is a combined battle we are fighting out there. It is a combined battle, particularly in Central Europe, the Air Force, the Army, and our allies over there.

The joint force commander sets his force objectives, but under him he has land and air component commanders that coordinate the execution. There is no way that the air component commander can select the right targets if the ground component commander does not work with him and advise him on that.

The ground component commander can't do his job either. So, we have our TAC air control centers. We have the BCE which is the battlefield coordination element in that.

You will notice this is a neat camouflage job. It is blue and green. One of them is the joint expression of enemy air defenses and operations on how to do that. We even have a form here on joint operations concept, attack second echelon.

This is the first cut. It doesn't have all the details, but in general it states how we are going to fight that battle. You will find it is signed by the commander in chief, General Starrey, down to commander in chief of the Readiness Command. You will find it was signed at that time by General Otis, commander of the Training and Doctrine Command, and General Creech of the Air Force.

We think in the last couple years we have come a long way in pulling together these two services to fight the joint battle.

With your support, we are going to do that even more.

Senator GOLDWATER. They will be made a part of the record. Thank you.

[Retained in committee files.]

Senator GOLDWATER. I am glad you mentioned General Starrey. He is one of the best friends we have.

General RUSS. That completes the final portion of our briefing. We are now available for further questions.

Senator GOLDWATER. Are there any questions from the committee?

Senator NUNN. I have two or three questions. We covered some of that as we went along.

Senator GOLDWATER. You go ahead.

Senator NUNN. I will be glad to defer to you.

Senator GOLDWATER. I don't really have any right now.

IMPROVED CONVENTIONAL MUNITIONS

Senator NUNN. Maybe you can give me an idea now and then furnish a list of your improved conventional munitions and your standoff delivery capability that you expect to field before the end of the 1980's.

General MERRYMAN. I can give you a list. Starting with artillery, we are looking at improved rounds that have ICM capability. Then you have FASCAM family of Scatterable munition mines we also shoot with artillery. Those are being fielded right now. That is 155 ICM and FASCAM 8-inch ICM.

In MLRS, that is the rocket launcher, we are going to field around that has 464 small bomblets in it that will go through light armor or would create casualties in an area probably 6 times the size of this room, each one of those. We will be fielding those starting this year.

You have been briefed on our plans for JTACMS, JSTARS and new-start munitions.

General WAGNER. Terminally guided submunitions will be late eighties early nineties.

MUNITIONS

Senator NUNN. On munitions, let me give you a few of them. If your could furnish for the record your expected time for IOC as well as when you will have a substantial number in the field.

The SADARM.

General MERRYMAN. I can tell you where we are, sir. We are looking at an 8-inch SADARM to be fielded in the [deleted].

We are in what we call starting ED, engineering development, and we are in what we call AD, advanced development, that is much earlier in the program, with a 155 SADARM.

We are also looking at what we call a fin stabilized smart munition for the 155.

The terminally guided, if I might clarify what General Wagner commented on, that is the terminal guided warhead we are developing for the MLRS which could be similar to the warhead we would look at for JTACMS.

Senator NUNN. Maybe I ought to get you to furnish each one of these for the record if you would. I don't want to take too much of the time of my colleagues.

[The information follows:]

MUNITIONS

The 8-inch howitzer SADARM has a projected First Unit Equipped (FUE) date of 2QFY89. Given the present level of funding and no acceleration to the program the First Unit Equipped date for a similar round for the 155mm howitzer is [deleted]. Development of a fin stablized smart munition for the 155mm howitzer is [deleted] or more years beyond the 155mm SADARM. Development of an MLRS Terminally Guided Warhead (TGW) is expected to be completed in [deleted].

Senator NUNN. SADARM is one, SKEET is another. The WASP is another. Has that been canceled?

General RUSS. Yes, sir.

[Additional information follows:]

IOC AND NUMBER IN FIELD/STATUS

For the Air Force munitions programs, Skeet in Tactical Munition Dispensers, called Sensor Fuzed Weapons, will be integrated into the inventory by fiscal year 1988. The BLU-97, Combined Effects Bomblets, integrated into Tactical Munition Dispensers, is in production this year. [Deleted]. Wasp was cancelled due to its high predicted development cost; however, the millimeter wave technology is continuing with projected applications in defense suppression as well as the Wasp application of anti-armor.

Senator NUNN. MLRS terminally guided warhead you mentioned.

The APAM. The BLU-97, I guess there is another one called the 1 BLU-97; is that right. Are those two separate ones?

General RUSS. I don't know. The nomenclatures is not familiar.

General WAGNER. There is an improvement that the Air Force is working on.

Senator NUNN. If you could furnish for me the expected date on each one of those to be put in the field and the status on it right now.

Then I would like the same kind of answer as far as the RFP on the fusion system. I know you have more than one fusion system; is that right?

General MERRYMAN. Yes.

Senator NUNN. Can you give me the RFP on those?

General WAGNER. That is a joint program.

Senator WARNER. Also the radar.

General GORTON. Joint STARS?

Senator NUNN. Yes.

General GORTON. We hope to have RFP out in the next couple of weeks.

[The information follows:]

RFP

The RFP for the Joint Tactical Fusion Program (JTFP) will be issued in the very near future. [Deleted].

Senator NUNN. And when fielded?

General GORTON. [Deleted] will be initial capability for the Army.

Senator NUNN. For each one of those you add one other column for the munitions and also for the joint programs and tell us which ones of these you have discussed with our NATO allies and whether we are in effect working on any of them?

If we are actually working on them with our allies, you can indicate that.

If we are not working on them, to the best of your ability give us some idea what their interest is.

[The information follows:]

SYSTEMS DISCUSSED WITH NATO ALLIES

Through our NATO working groups on munitions, we have briefed our allies on all our conventional munitions and submunitions. A major area of formal cooperation is through the Air-to-Air Family of Weapons agreement where the United States will develop the Advanced Medium Range Air-to-Air Missile (AMRAAM) and provide it to our allies and Germany and the United Kingdom will develop the AIM9 Sidewinder replacement, the Advanced Short Range Air-to-Air Missile (ASRAAM) and provide it to the U.S. and other NATO allies. Our allies' interests in other munitions vary as function of cost, aircraft compatability and availability. Since most have or are getting F-16 of F-18 aircraft, they are most interested in munitions which the U.S. is integrating on those platforms.

MUNITIONS

There is no involvement by our NATO allies in the development of the eight inch howitzer SADARM or any 155mm smart ammunition. The MLRS Terminally Guided Warhead (TGW) is an international cooperative program between the

United States, United Kingdom, West Germany and France. A Memorandum of Understanding was completed in December between the four countries. Contract award is planned for September 1984 with an expected 84 month program to completion. A decision on total quantities will be made after product development and initial testing is complete (approximately 1986).

General **Merryman**. You are familiar with the fact that FRG is working with the terminally guided warhead. That is joint.

Senator **Nunn**. Yes, I am thinking about these munitions. Frankly, the key to the whole thing is whether the allies are at some point going to go along because we can't handle the whole battle front. I don't believe anybody believes that.

It will take the whole allied posture. The key, if they go along, is whether we arrange in advance some two-way street procurement here.

[Additional information follows:]

JTFP

The NATO International Staff has expressed an interest in using Joint Tactical Fusion Programs (JTFP) to provide electronic support measures information to NATO commands. NATO is also establishing a special working group on tactical fusion to address fusion applications. Military representatives from the United Kingdom, Canada, Germany and France have also expressed an interest in JTFP initiatives.

Three major requests for proposal (RFP) are planned for the baseline All Source Analysis System (ASAA) and Enemy Situation Correlation Element (ENSCE). These will be issued by the Jet Propulsion Laboratory to industry as follows:

Contract A. This contract is for the design, development and manufacturing of the communication, processing and interface modules of the ASAS/EMSCE. The RFP is scheduled for release in May with contract award planned for September 1984

Contract B. This contract will support the design, development and manufacturing of the intelligence data processing module, remote workstations, support shelters, integration and logistics support and testing integration tasks. The RFP is scheduled for release in May with contract award planned for September 1984.

Contract C. Multiple contracts (possibly five) will be let for intelligence application software and design packages. The procurement under this effort is for software packages already available. Contract awards are planned for July 1984.

The acquisition strategy for the All Source Analysis System (ASAS) and Enemy Situation Correlation Element (ENSCE) follows an evolutionary development approach. Six baseline systems (five Army and one Air Force) will be fielded beginning in [deleted] employing off-the-shelf and minimum development hardware and software to achieve a limited functional capability in multiple operational environments. Then, through a series of preplanned product improvements and continuous software growth, the systems will evolve to meet the full level of performance envisioned in the service requirement document. In fiscal year 1988, a production decision is planned. Objective ASAS and ENSCE fielding will begin in fiscal year 1990/91. The current Air Force ENSCE requirement is for [deleted] and the Army ASAS requirement is for [deleted]. Fielding for the baseline ASAS and ENSCE is as follows:

[Deleted].

The people I know over there, who are the most enthusiastic about this whole concept, tell me unless there is joint procurement or unless we are buying some systems from them, unless there is some kind of two-way street, as they call it, there is not going to be any allied effort in this area.

At some point we have to find out. There is no sense spending $12 billion if we are going to be sitting out there protecting one small segment of the whole battle front from a second echelon.

I would like very much to know what we are doing with our allies in each of these areas, if anything.

One other question, Mr. Chairman, if I could.

The present budget for fiscal 1985 requests $114 million for JTACMS, $203 million for JSTARS. I think in 1984 there has been $168 million appropriated for these programs.

Could you tell us what the status of the 1984 allocated funds are and whether the 1985 funds are actually needed based on your present timeframe?

General **Russ**. I don't know what the status is of the JTACMS 1984 funds.

As far as the JSTARS, I am sure it is the same.

[The information follows:]

1984 AND 1985 FUNDS

For Joint STARS, fiscal year 1984 funds were appropriated as follows:

[In millions of dollars]

	RDT&E	Procurement	Total
Air Force	$41.0	$0	$41.0
Army	69.0	12.0	81.0
Total	110.0	12.0	122.0

Of these amounts the Office of the Secretary of Defense has released $15 million to the Air Force and $36 million to the Army. These funds are being used for risk reduction contracts to advance antenna technology, for studies of interoperability, for development of the Army Ground Station, for aircraft modifications, and to prepare for and support the Full Scale Development competition. The balance of fiscal year 1984 funds, when released by the Office of the Secretary of Defense, will be expended on the Full Scale Development of Joint STARS. The competition for the Joint STARS prime contract is now underway with contract award planned for August 1984.

The requested funds for fiscal year 1985 are:

[In millions of dollars]

	RDT&E	Procurement	Total
Air Force	$98.3	$0	$98.3
Army	108.2	17.0	125.2
Total	206.5	17.0	223.5

These fund are definitely needed for Joint STARS' first full year of the full scale development contract.

General **Gorton**. $14 million RDT&E in 1984.

General **Merryman**. Because the services have not decided completely on what the programs are, I think your point is that the 1984 dollars, therefore, have not been spent or not all of them, and that is so.

However, because of the urgency of the program and because of the way the programs are laid out, we will tell you that the money is needed that we have requested because we have been planning on putting 1984 and 1985 dollars to move forward to the IOC that you have been briefed on today.

Senator NUNN. How do you stand with the Department of Defense now, the people in the Defense Department that have been pushing these concepts?

Is everybody marching to the same general tune or is there still a widespread difference between their own timeframe and service timeframe?

General RUSS. I speak from the Air Force viewpoint. I think we are all pretty well in agreement. I think we got off to a little rocky start, to be perfectly frank.

Part of the reason for that was that we didn't know in the service exactly what we needed and what we wanted. Everyone was eager to get something and, therefore, we moved out smartly with something that no one could define. We have very great difficulty in that because we were putting dollar numbers down and IOC's when we didn't even know what the system was going to look like.

Over the past year, through a lot of work on both the Army and Air Force's part, and OSD, we have developed a set of requirements. I think we now know where we are going.

I think everybody is in agreement on the JSTARS system with the exemption of the minor things on the platform. That will shake itself out.

The other one is on the JTACMS. We are not quite there yet, but we have good dialog with the Secretary of Defense's office. I don't think it will be any problem.

Senator NUNN. Do you have dialog with the allies on these at the service level?

General RUSS. Yes, as a matter of fact, we do.

About 1 month ago I spent a week in Germany and England discussing JSTARS, JTACMS as well as PLSS as well as other systems that we are providing because some of these Air Force systems will be NATO systems.

In other words, our PLSS system which is to provide the electronic order of battle given to the NATO allies as well as the information we would receive from the JSTARS sort of platform.

Yes, we are looking at it. They were enthusiastic about it. In fact, I had some of my research and development people going over to brief their lower level to describe exactly what type of data could be received and how it would be processed and that sort of thing.

Senator NUNN. Thank you Mr. Chairman.

Senator GOLDWATER. Senator Warner?

Senator WARNER. Mr. Chairman, I yield to Senator Quayle. He was here before me.

Senator QUAYLE. I have no questions.

Senator GOLDWATER. Senator Warner?

Senator WARNER. Gentlemen, some basic questions.

CRUISE AND BALLISTIC MISSILES

I must say I have a little concern. If the Air Force is primarily interested in striking fixed targets and the Army is interested in attacking moving targets, doesn't this indicate a cruise type missile requirement in the first case and a fast missile in the second?

General Russ. Sir, I think that initially we thought that was probably the best way to do that. The ballistic missile solution has some advantages in that generally it is more survivable and it is faster to the target.

The cruise missile on the other hand is generally better for submunitions dispensing because it makes a better pattern. It takes a little longer to get there and is probably a little less survivable.

What we need to do is sit down and decide whether one of those solutions is sufficient for both of them. I don't know whether it is or not.

My personal belief when we initially undertook this evaluation was that it might be useful to have a ballistic solution for the Army and cruise solution for the Air Force in that it would complicate the defenses of the enemy.

Now he has two types of weapons to worry about, one coming in overhead and one coming in at low altitude. But we have not made that final judgment yet. I hope to next month.

General Merryman. I agree with what General Russ has said. I would add one other thing.

This is going to be a terribly expensive system we are talking about. We owe it to you to come up with something we can afford. That is a hard job. That is what we are working on.

Senator Warner. I am worrying about the old TFX. I came in the backwash of that.

Further, the Air Force wants some air launch capability and the Army wants ground launch capability.

Is it reasonable to assume we can come up with a requirement to fit both?

General Russ. Sir, it is difficult.

Senator Warner. I think you gentlemen are being candid.

General Russ. It is difficult to do that. We can probably come up with some common system, but if that system costs in the millions of dollars, it really doesn't make any sense to come up with a common item like that.

Senator Warner. You represent that you have the courage and determination to so address that issue to your superiors and come back to the Congress with your collective judgment that to put the two things together just won't fit?

General Russ. Yes, sir, we will. We are doing that right now.

General Wagner. In the past the Army has had a bias toward ballistic missiles for exactly what you laid out initially, rapid reaction.

However, I in my personal view, I am not sure we ever took a close look at what the cruise capability may give us because you know it can loiter. So, if you fire it and you lose that target for a short time, it has some loiter capability so that you don't have it going into the ground like with the ballistic missile.

There are advantages to that cruise, too. I think the Army may have been premature in ruling that out. We are looking at all those aspects.

We will go to our bosses with what we think is the best overall solution after we finish our studies on it.

Senator Warner. You have a little bit of a blue and red team dialog going on in this program?

General **Russ**. Yes, sir.

PROPOSED FISCAL YEAR 1985 LANGUAGE

The services could best ensure an affordable, combat effective system with language that permitted consideration of all available options without limitations.

General **Merryman**. What we need is relief from last year's language. Last year's language leaves us no alternative.

The Congress told us last year to look at two missiles, the T-16 and T-22. That is one of the reasons we have not progressed any further than we have because what we want to do is use commonsense, which is what you are suggesting we do, but we can't because of the way the law is written.

Senator **Warner**. Perhaps, Mr. Chairman, we should allow them an opportunity to submit an amended language request.

General **Russ**. Sir, I might add to that that a lot of things went into that decision.

Senator **Warner**. What decision? The congressional one?

General **Russ**. It was done in conjuction with the Department of Defense people. Not necessarily the uniformed services, but with other parts of the Department of Defense. It is not recognized in the uniformed service and Department of Defense it was a mistake to issue a solution to a problem when we didn't have time to decide exactly what we wanted to do.

In fact, Dr. DeLauer last week stated in front of the House Armed Services Committee that we made a mistake. He said: I think it was a mistake to put it in the authorization. We were too early to specify the type of booster platform and assume that both sides could use some variant of either one.

That is all water over the dam. I think we have proceeded along a line that will allow us to select the best weapon that the services need and if we have some relief this year from the previous language, it would certainly help.

Senator **Warner**. I apologize for me being late, Mr. Chairman. Has this issue been addressed in the hearing already?

Senator **Goldwater**. Yes.

Senator **Warner**. Then let us not go back over it.

General **Wagner**. There is a key point I didn't address along that line.

If you take a T-16 or T-22 to do this job, all you are actually taking is the outer shell of it because you are going to have to put a different motor in it to do the job, you are going to have a new warhead on it, new guidance system. So you don't have the T-16 or T-22 that we have today.

What we really think is that we should be given a chance to come back to you and say this is the best overall solution and if you agree with us, this is the way we should go instead of dictating which may not be the best solution.

Senator **Warner**. You have briefed the committee today with respect to this request?

General **Russ**. Yes, sir.

Senator **Warner**. Mr. Chairman, I will put the balance of my questions in the record for response.

Senator **Goldwater**. Thank you.

Thank you, gentlemen, for coming to the meeting.

I have some questions that I will submit to you for your written answers.

I want to compliment you. You have done a very thorough job.

This is the last of our tactical warfare hearings. As I have told you time and again, those people aiming at budget reductions, and I am one of them, will have their effect upon what we decide you are going to get.

We will do our best to see that our Armed Forces are not hurt and I think we can do it with your cooperation. I know we can.

Please keep us posted on the decisions that are obviously coming in the next several months so that we can be better posted on what we have to do.

[The questions submitted for the hearing record follow:]

QUESTIONS SUBMITTED BY SENATOR BARRY GOLDWATER, ANSWERS SUPPLIED BY THE DEPARTMENTS OF THE AIR FORCE AND ARMY

T-16 OR T-22 CHOICE

Senator GOLDWATER. General Gorton, last year the House-Senate authorization conferees provided language directing a choice between the T-16 and T-22 missiles for the Army JTACMS and encouraged the Air Force consider a variant on one of those missles for the Air Force requirement. What is the Air Force position with regard to selecting either a T-16 or T-22 variant for the JTACMS?

Answer. The Air Force has studied the T-16 and T-22 variants and the requirements for the Interdiction Mission. Project Interdiction, Phase II, study results indicated that other alternative weapon delivery vehicles might better meet Air Force requirements, perhaps at a lower cost. The Air Force released a Request for Information to industry in December 1983 to search out these alternatives. We are currently evaluating the results but have not yet established an Air Force position on the subject.

OTHER DELIVERY VEHICLES

Senator GOLDWATER. General, the conferees intentionally left open the option to consider other delivery vehicles to meet the Air Force requirement. This would allow consideration of cruise missiles in addition to ballistic missiles.

What is the Air Force's current preference, a cruise missile or a ballistic missile?

Answer. The Air Force is currently evaluating alternatives for JTACMS. This evaluation includes both cruise and ballistic weapons. The Air Force has no preference for cruise or ballistic profiles per se; rather the Air Force wishes to meet its schedule and performance requirements in the most cost effective manner.

IOC

Senator GOLDWATER. There seemed to be agreement during the authorization conference last year that selecting a T-22 or T-16 variant would lead to the earliest IOC.

What would be the IOC of an Air Force variant of a T-16 or T-22?

What IOC is possible if the Air Force chooses instead to develop a cruise missile for the JTACMS?

Answer. The JTACMS program office recently proposed a schedule leading to an [deleted] for a JTACMS varient of a T-16 or T-22. This was somewhat constrained by proposed funding lines, but their evaluation indicated that unlimited funding would only advance the schedule a few months. We are now evaluating the schedule achievable with alternative candidate configurations but have not yet determined a specific IOC date.

JTACMS FUNDING PROFILE

Senator GOLDWATER. What is funding profile in the Air Force budget for the JTACMS?

Answer. The fiscal year 1985 President's budget requests $35,509,000 for fiscal year 1985 and proposed $86,571,000 for fiscal year 1986.

DEGREE OF COMMONALITY

Senator **Goldwater**. General, should Air Force select a cruise missile, what degree of commonality may still be achieved between the Army and Air Force JTACMS.

Answer. The Air Force and Army are continuing to study areas of commonality in requirements and hardware configuration. The Army is currently conducting an intense review of their requirements which is scheduled for completion in April 1984. We plan a Joint Requirements review during April to determine requirements overlap and the potential for commonality.

TARGET BASE FOR JTACMS MISSILES

Senator **Goldwater**. It has become a popular notion that JSTARS/JTACMS programs are primarily intended to defeat enemy armor.

General Gorton and General Wagner, would you comment on what you see as the target base for the JTACMS missiles? Are tanks the number one priority target or are there other more lucrative targets?

Answer. The Air Force, like the Army, considers attacking armor to be an important mission and JTACMS could be used in this role. However, the Air Force foresees a greater payoff for this weapon in defense suppression and the interdiction of high-value, fixed targets.

JOINT STARS

Senator **Goldwater**. General Wagner, the Army intends to install the JSTARS radar on on OV-1 aircraft. Since questions have been raised over the relative survivability of the C-18 and the TR-1 aircraft—both of which fly considerably higher and faster than the OV-1—do you answer questions about the survivability of the OV-1?

At what range from the FLOT and at what altitude will the Army JSTARS operate?

Aside from the Army's concern that the Air Force may not be there when the Army needs the targeting information, what are the reasons why the Army must have its own dedicated JSTARS platform?

Could the Army receive sufficient targeting information from the Air Force JSTARS platform?

General **Wagner**. The OV-1 will operate about [deleted] to the rear of the FLOT at an altitude of about [deleted] ft.

From a tactical standpoint there are several reasons why the Army must have its own dedicated aircraft and use Air Force assets. These include:

Area of Coverage Beyond the FLOT. Since the radars are modularly identical, the range of coverage beyond the FLOT is determined by a number of factors including the standoff range. For the OV-1D, which operates at a [deleted] standoff and makes use of its ASE and inherent maneuverability, the radar coverage extends out to [deleted] beyond the FLOT. Two OV-1Ds are used to provide coverage of the corps frontage. The TR-1 makes use of its altitude to permit standoff at a longer range. Its maneuver, when engaged, is a turn away from the FLOT and escape. The TR-1 stands back further from the FLOT, using high altitude, a self-protection suite and maneuver to enhance platform survivability.

Limitations of Track vs Wheel Classification. Track vs Wheel classification is a critical element in selecting artillery weapons. Given the longer standoff range, the TR-1 system is [deleted]. To obtain the data, however, requires the supporting ground station have an uplink which, while included in Joint STARS, is not planned or desirable forward based ground stations (GSM) (i.e. DTOC, and Div Arty) since it will provide a [deleted]. Even with this command link, the TR-1 system must operate on an interrupt basis to serve each GSM. In contrast, the OV-1D system, operating at [deleted] behind the FLOT, provides continuous track vs wheel classification to ranges of [deleted] beyond the FLOT automatically, without requiring the use of an uplink. Thus all echelons will have the vital classification data without disclosing their position.

Minimum Detectable Velocity of the TR-1 Based System. Because of its higher platform speed, the radar on the TR-1 must make use of more complex signal and antenna processing techniques to overcome the clutter spread due to the higher speed platform [deleted]. Antenna design constraints force the system design to provide either minimum velocity or targetable accuracy. Both cannot be provided simultaneously. [Deleted].

Tactical Robustness. The core of the AirLand Battle concept is to see deep and strike deep. Central to this is the ability to provide near continuous coverage of both near and far ranges. With two OV-1D aircraft and the TR-1 providing coverage of the Corps area of interest, an attacking force must be able to plan and execute simultaneous attacks against the three platforms separated by wide distances. A single attack will not result in loss of the total capability. Other systems will be able to provide a significant level of redundant coverage. If the TR-1 were driven off station or destroyed without a complementary OV-1 platform, there would be a complete loss of corps coverage.

Expected numbers of platforms. The OV-1D are in the existing Army aircraft inventory. Procurement of an equivalent number of TR-1s would likely excess the cost of maintaining the OV-1D fleet.

For the reasons described above, the Army believes it would not receive adequate targeting information from an architecture that includes only an Air Force Joint STARS Platform, but requires the synergism and tactical robustness of both Army and Air Force assets to successfully execute the AirLand Battle.

Senator **Goldwater**. General Wagner, concern has been expressed over the survivability of the airborne platform containing the JSTARS radar. Similar concern should be directed to the survivability of the JSTARS ground stations. Certainly these ground stations would be very attractive targets to any potential enemies.

General **Wagner**. The JSTARS Army Ground Station Module is an S-280 shelter mounted on a 5 ton truck. As such, it is undistinguishable from other standard shelters in the Army inventory. It is equipped with Kelvar protection for defense against artillery and bomb fragments. It is designed to be integrated with standard NBC filter systems to support operation in that environment. With the exception of those ground stations located deep in the Corps rear with the JTACMS and the corps artillery, the systems operate passively. The ground stations are equipped with a telescoping antenna which is capable of being erected up to a height of 100 feet in the forest (the antenna is in a bullet shaped radome capable of light tree cover penetration) or in a village. Hence the system will be able to make maximum use of cover and concealment. It can operate deep in a ravine, for example with only as much antenna erected as required. On balance, the Army ground station will be very survivable because its inherent mobility, lack of a distinct signature, and ability to operate in a variety of terrain and threat situations.

JOINT TACTICAL MISSILE SYSTEM (JTACMS)

Senator **Goldwater**. General Merryman, please give us the Army requirements (range, payload, etc.) for the joint tactical missile. What current systems will JTACMS replace?

General **Merryman**. The Army is still in the process of determining requirements. Emerging requirements indicate that maximum range for the system should fall between [deleted] kilometers beyond the forward line of troops. Both anti-personnel anti-materiel (APAM) and smart warheads are under consideration. The system accuracy required is [deleted] at maximum range. Maximum weight and length of the missile depend on the launcher selected, but the optimal dimensions appear to be approximately [deleted] and [deleted]. These requirements, once finalized, will be coordinated with the Air Force to take advantage of the areas in which commonality can be attained without sacrificing needed capability. JTACMS will replace the conventional capability of the currently deployed LANCE missile system.

Senator **Goldwater**. Have you compromised these Army requirements in an effort to have a joint missile with the Air Force—are you satisfied with the Army requirements as they are now stated?

General **Merryman**. As I have stated previously, the Army requirements are still being determined. The Army and Air Force are committed to achieving the maximum attainable degree of commonality in JTACMS without sacrificing the mission requirements of either service. The services believe the potential for a significant amount of commonality exists in terms of air vehicles, guidance systems, and munitions. Where our tactical requirements mitigate against jointness, however, both services agree that commonality for its own sake is inappropriate.

Senator **Goldwater**. Is it possible to meet the Army requirements with a 16-inch missile?

General **Merryman**. The T-16 could be developed to satisfy Army requirements. The real issue, however, is affordability. The T-16, along with all other candidate missiles, is currently being analyzed to determine which system best meets affordability and capability requirements.

Senator **Goldwater**. Do you feel the JTACMS should have a nuclear warhead capability?

General **Merryman**. The Army sees JTACMS as a conventional corps support weapon which will enable the Corps commander to attack targets beyond the range of currently deployed cannon and rocket systems. JTACMS does not have a nuclear capability, nor is one envisioned. Requirements may change in the future, but I see no need now for a nuclear capability.

Senator **Goldwater**. General Merryman, the Army's Lance missile is a 22-inch missile. What are the capabilities of Lance; does it have both a nuclear and a non-nuclear warhead?

General **Merryman**. The Lance missile system has both a nuclear and a non-nuclear warhead. Its capabilities are:

	Non-nuclear	Nuclear
Range (KM)		
Accuracy (max range)		
Guidance	[deleted.]	
Propulsion		
Warhead		

Senator **Goldwater**. General Merryman, where was the Lance missile built? Are the production facilities still available?

General **Merryman**. The Lance missile was built at the now defunct Army Missile Plant in Warren Mich. The production facility has been dismantled. The tooling has been placed in storage.

Senator **Goldwater**. Can the Army requirements be met with a 22-inch missile?

General **Merryman**. The T-22 has demonstrated the capability to satisfy Army requirements developed thus far. The real issue, however, is affordability. Along with other candidate missiles, the T-22 is being analyzed to determine which system best meets affordability and capability criteria.

Senator **Goldwater**. General Merryman, if the Army were to proceed with a 22-inch missile, "an improved Lance" missile, how long would it take you to get such a missile into production and how much would it cost for both R&D and production?

General **Merryman**. If you mean by "an improved Lance" missile, a solid propellant booster, adapting the existing non-nuclear warhead to this booster and modifying the existing single launch Ground Support Equipment (SGE) to accept the missile, it could be fielded in the fiscal year [deleted] time frame. The Army estimates that this program would cost approximately $750 million in RDTE and $1,255 million in procurement for [deleted] missiles. This does not include an antiarmor warhead nor multilaunch GSE. In order to develop these additional capabilities and to procure [deleted] antiarmor missiles, the RDTE and procurement costs would rise to $920 million and $5,917 million, respectively. This type of capability could be fielded in the early 1990s. However, regardless of how you proceed, this is going to be a terribly expensive program. It is for this reason the Army is proceeding in such a deliberate manner.

Senator **Goldwater**. General Merryman, if you selected a 22-inch missile, is there sufficient interest and capability in industry to do it on a competitive basis?

General **Merryman**. Yes, there appears to be sufficient interest to insure competition. However, specifying the diameter gives industry the perception that competition is only superficial. If the requirement is specified in performance (i.e., range, effectiveness, etc.) rather than diameter, competition is more likely.

DEEP STRIKE

Senator **Goldwater**. Since joint need for joint systems has been established, what further actions have been taken by the JCS, their unified commands and the Army and Air Force to assure that their requirements and programs are consistent and harmonized?

Answer. The Organization of the Joint Chiefs of Staff has been, and will continue, monitoring and coordinating the ongoing efforts of the Services to assure integration with the warfighting needs of the unified and specified commands. This is being done through a variety of joint working groups and periodic conferences involving the services, the Joint Staff, and the unified and specified commands.

On October 7, 1983, the agreed upon joint requirements for the Joint Surveillance Target Attack Radar System were briefed to and accepted by the Principal Deputy Under Secretary of Defense for Research and Engineering. The Request For Proposal was released on March 16, 1984.

The Army and Air Force continue to support development of a conventional capability under the Joint Tactical Missile System program which would enable Army forces to engage key targets with surface-to-surface means beyond the range of cannon and rocket artillery and provide the Air Force with an improved standoff weapons capability. Both services are currently working to establish the joint requirements for a JTACMS directed to insure development of effective and affordable combat capabilities which maximize the use of existing personnel and material resources, capitalize on emerging technologies, and significantly improve the ability of the services to conduct joint air-land battle operations.

Both services are presently engaged in intensive analyses to qualify and define their operational requirements. At the completion of these analyses, expected in late March 1984, the services will be in a good position to refine their specific requirements in a Joint Statement of Operational Requirements (JSOR) and complete the ongoing draft of a Request for Proposal. The outcome of this joint effort will permit the services to have the best justification and definition of the service-unique and joint aspects of the program before going to industry for detailed proposals.

Following completion of the JSOR and the publication of the Request For Proposal, the services will be in a position to enter full-scale development contracts. They will be in a better position to know if this plan is advisable following the completion of the detailed analyses and the final definition of the service-unique and joint requirements.

FISCAL YEAR 1984 ALLOCATED FUNDS

Senator GOLDWATER. The President's budget for fiscal year 1985 requests $11.4M for JTACMS and $203M for JSTARS. Further, $168M has been appropriated for fiscal year 1984 for these programs.

Will the services spend the fiscal year 1984 allocated funds and are they prepared to commit the fiscal year 1985 funds in order to proceed with the program?

Answer. The Air Force portion of the fiscal year 1984 funds is $9.8M for JTACMS and $41.0 for Joint STARS. The JTACMS fiscal year 1984 funds are being used for risk reduction in terminal seekers, GPS guidance, and warheads applicable to any JTACMS weapon. The Air Force is currently evaluating the responses to an industry-wide Request For Information and intends to proceed with a development program based on information from this evaluation. Upon completion of on-going Army analyses to quantify and define their operational requirements, the services will jointly refine their specific requirements in a Joint Statement of Operational Requirements (JSOR) to structure a program with the maximum commonality that is practical. The Air Force JTACMS fiscal year 1985 funds will be used to proceed with this program. The Joint STARS fiscal year 1984 funds support evaluation of the RFP, which has been released, and the subsequent Source Selection process. Air Force fiscal year 1985 funds will be used to continue the Joint STARS Full Scale Development program initiated by the RFP release.

QUESTIONS SUBMITTED BY SENATOR JOHN W. WARNER, ANSWERS SUPPLIED BY THE DEPARTMENTS OF THE AIR FORCE AND ARMY

COMMON MISSILE

Senator WARNER. Since the Air Force seems primarily interested in striking air defense sites (fixed targets), and the Army is interested in attacking moving targets, doesn't this indicate a cruise type missile requirement in the first case and a fast missile in the second? Also, the Air Force wants an air launch capability, while the Army wants a ground launch capability. Is it reasonable to assume that we can come up with a common missile that fits the requirements of both?

Answer. Given equal accuracy, a fast and a cruise missile should have similar effectiveness against fixed targets. A fast missile would provide a more rapid attack capability against moving targets; however, in conjunction with a Joint STARS track of moving targets, the cruise missile with its inherent loiter time may also be effectively targeted against mobile targets. The Air Force and Army are continuing to study requirements and the potential for commonality.

SURVIVABILITY OF C-18 AND OV-1

Senator **Warner**. Would you comment on the survivability of the C-18 and OV-1 aircraft as carriers for JSTARS?

Answer. Both aircraft would be vulnerable to a determined air interceptor attack or a surface-to-air attack. Defense suppression, blue air defense (air-to-air, ground-to-air) and self-protection measures will contribute to improved survivability.

SURVIVABLE RANGE COMPATIBLE WITH AIR FORCE

Senator **Warner**. What is the rationale for the Army's 200km survivable range of the JTACMS? Is this reasonably compatible with the Air Force range requirement?

Answer. The Army has not completed its analysis of the JTACMS requirement and has not reached a final decision on what the maximum range should be.

The Air Force intends to meet with the Army after both services have finalized their service unique requirements. At this point, the services will be in a good position to refine their specific requirements in a Joint Statement of Operational Requirements (JSORS).

ARMY/AIR FORCE COMMON MISSILE SYSTEM

Senator Warner. This entire system looks like it will take a lot of communications. Have we planned for all of this?

Answer. The Air Force has planned for the communications required for real time attack control. Joint STARS will be linked to ground Command and Control elements by one or more data links depending on specific hardware and operational concept decisions to be made during Full Scale Development. The Joint STARS Weapon Data Link will have the capability to communicate target data and target updates to suitably equipped missiles and direct attack aircraft. Army and Air Force JTACMS systems with weapon interface units will use common data links and will be fully interoperable.

Questions Submitted by Senator Jeff Bingaman, Answers Supplied by the Departments of the Air Force and Army

DESIGN CRITERION FOR JTACMS

Senator **Bingaman**. I recognize JTACMS is still in the earliest stages of definition. But could you tell me approximately what the design criterion will be for JTACMS effectiveness against a typical Soviet tank battalion? How many missiles or aircraft sorties will be required to destroy 30% of the vehicles in the battalion in the case of each of the possible warheads (SKEET, SADARM, TGSM, Combined Effects Munition)?

Answer. As part of the pre-FSD study work in fiscal year 1984, the design criteria for JTACMS against all targets will be determined. The number of missiles and aircraft sorties required to effectively neutralize the targets will be determined during the FSD program.

JTACMS EFFECTIVENESS AGAINST SOVIET TANK BATTALION

Senator **Bingaman**. How might this effectiveness be degraded by poor weather, foliage and camouflage, Soviet countermeasures, higher false target density, and failure to achieve design goals on submunitions kill probability and seeker target acquisition probability?

Answer. Few if any conventional weapon systems are 100 percent effective. The several factors cited will degrade to varying degrees seeker target acquisition and submunition kill probability. Design tradeoffs of potential seekers and submunitions for JTACMS will be accomplished to address many of these areas of concern.

AVAILABILITY OF DELIVERY PLATFORMS

Senator **Bingaman**. Approximately, how many JTACMS delivery platforms will be available for attack of the Soviet second echelon?

Answer. JTACMS will be compatible with current generation fighters, B-52s, and the B-1B. The TAF will have several hundred F-16C/D and F-15E aircraft capable of carrying JTACMS. F-111s may also be configured to carry the missile. SAC plans to modify its non-ALCM B-52Gs for JTACMS carriage and may carry it on the B-1B.

The actual number of JTACMS that will be procured is under evaluation. Consideration is being given to the total target base that a JTACMS weapon must cover, as well as alternative weapons to cover the targets.

Senator GOLDWATER. Thank you, the meeting will stand adjourned.

[Whereupon, at 4 p.m., the subcommittee adjourned, subject to the call of the Chair.]

INDEX

A

Page

- A-6 ... 1520, 1533
- A-6E Intruder ... 1468, 1472, 1498, 1529
- AH-1S Cobra ... 1435
- AH-1T Sea Cobra ... 1470, 1475, 1512
- AH-15 Cobra-TOW ... 1368
- AV-8 safety ... 1561
- AV-8B Harrier ... 1469, 1473, 1502, 1503
  - IOT&E ... 1561
- AGM-88A HARM ... 1471, 1481
- AIM-54C Phoenix ... 1471, 1481
- ALQ-123 ... 1494
- ATF status ... 1755
- AUV fleet ... 1766
- Abrams tank:
  - M1-M1E1 ... 1294, 1295
  - Second engine source ... 1264
  - Financial summary ... 1295
- Acquisition:
  - Initiatives ... 1262
  - Practices ... 1453
- Active/Reserve mix ... 1551
- Advanced medium range air-to-air missile ... 1669
- Advanced tactical fighter ... 1593, 1668
  - Technologies ... 1707, 1708
- Adversary ... 1479
- Aerial refueling ... 1659
- Air defense ... 1387
  - Base ... 1770
  - Weapons systems ... 1334
- Air defense and strategic defense ... 1703
- Air Force priorities ... 1760
- Air-launched cruise missile ... 1622
- Air National Guard and Air Force Reserve, use of ... 1761
- Air superiority threat ... 1575
- Air support, close ... 1757
- Air wing mix ... 1488
- Airborne self-protection jammer (ASPJ) ... 1738, 1770
- Aircraft:
  - Adversary ... 1555
  - Common ground equipment ... 1652
  - For Guard, replacement ... 1765
  - Procurement estimates, fiscal year 1985 ... 1684, 1685, 1686, 1687
  - Spares, fiscal year 1985 ... 1514
- AirLand battle ... 1266
  - Deep attack programs office ... 1806
  - Joint synchronization ... 1267
- Airlift ... 1653
- Allocated funds, fiscal year 1984 ... 1820
- Alternate fighter engine ... 1709
- Ammunition, 155mm ... 1558
- AMRAAM ... 1711, 1769

Page

AMRAAM—Continued
  Ceiling price 1750
  Purchase, increase 1762
  Schedule slippage 1748
  Status 1711
  Unit cost 1749
AMRAAM, LANTIRN, and Maverick 1710
AMRAAM/Sparrow cost differences 1746
Apache attack helicopter (AH-64) 1289, 1300
  With Hellfire 1367
  Financial summary 1301
Armored combat earth mover 1395
Army:
  Development and employment agency 1279
  Divisions available for deployment 1269
  Helicopter improvement program (AHIP) 1304, 1369, 1448
  Financial summary 1306
  Remotely piloted vehicle program (RPV) 1437
  Tactical programs 1257
ARMY/DOE R&D cooperation 1462
Artillery locating radar 1388
Attack helicopters 1335
Attack, withstanding 1760
Aviation readiness, Navy/Marine Corps 1528
Aviation safety 1487

B

B-1B bomber 1621
B-52 bomber 1620
  Weapons system trainer 1650
Ballistic missile defense 1421
Battle, coordinating the 1808
Black Hawk 1289
Bradley fighting vehicle 1297, 1362, 1363, 1431
  Cutback 1299
  Financial summary 1298
Budget:
  Priorities 1609
  Summary, RDT&E 1258

C

C-2A Greyhound (MYP) 1478
C-5B Galaxy 1656
C-9B 1477
C-12F operational support airlift aircraft 1658
C-17A airlift aircraft 1656
C-18 and OV-1, survivability of 1821
C-20 operational support airlift aircraft 1658
C-21 operational support airlift aircraft 1657
C-130H tactical airlift aircraft 1336, 1340
C-131 mission support aircraft, replacement of 1343
CH-47 helicopters 1436
CH-47D modification program 1405
CH-53E Super Stallion (MYP) 1511
CH/MH-53E Super Stallion 1470, 1474
Capability requirements 1588
Carrier equipment shortfall 1536
Cavalry squadron 1276
Chaparral 1390
Chemical/biological forces 1681
Chemical weapons 1447
Combat:
  Identification 1732, 1733
  Search and rescue 1544
  Service support 1403
  Support 1394

Page

Combat Sea Air Rescue (CSAR) 1543
Command, control, and communications (C^3) 1411, 1456
Commercial utility cargo vehicles 1408
Commonality, degree of 1817
Communications 1343
  Army 1437
  Equipment 1337
  Systems, advanced 1729, 1730
  Systems, Army/Air Force 1744
Competition in contracts 1450
Conventional warfighting capability 1259
Conventional weapons 1724
Contract(s)
  Acceptance suspension 1439, 1440
  Delay 1767
Copperhead 1385, 1560
Cost growth, systems 1758
Cruise and ballistic missiles 1813

D

Debarments, DLA 1450
Debarments and suspensions:
  January 1984, U.S. Army 1452
Defense:
  Budget, Army's share 1454
  Meteorological satellite program 1629
  Satellite communications system 1628
  Support program satellite 1639
Delivery platforms, availability 1821
Digital avionics system 1767
Division air defense gun (DIVAD) 1433, 1455
Drones, expendable 1731
Dual role fighter 1693, 1752
  Cost summary 1699
  Radius chart 1701
  Schedule 1754

E

E-2C Hawkeye 1470, 1476, 1513
E-3A 1734
  AWACS buy 1677, 1761
EA-6B Prowler 1469, 1472, 1491, 1499, 1501, 1554
EF-111:
  Production program 1746
  Upgrade program 1747
EF-111A electronic countermeasure aircraft 1675
EJS wave form 1743
EW counter response (EF-111A) 1737
Engine roadmap 1594
Equipment:
  Between services, interoperable 1743
  Electronics and telecommunication 1721
  Fire fighting 1720
  Increases 1449
  Material handling 1720
  Miscellaneous 1721
  Needs, National Guard 1463
  Requirements, ARNG 1334, 1336
  Status, Army 1260
  Tactical C-E 1722
  Vehicular 1719
Equipping the U.S. Army 1345
Europe, conventional deterrence in 1458

F

F-4: Page
  Low-smoke engine, ANG 1342
  Reengining 1579
F-4G Wild Weasel defense suppression aircraft 1676
F-5E and F-5F 1531
F-14 reengine 1553
F-14A Tomcat 1469, 1473, 1506
F-14D 1505
F-15 1703
  Air defense fighters 1635
  Chaff and flare dispensers 1771
  Eagle 1666
  For ANG 1338
  Outperforms F-16 1751
  Performance advantages 1748
  Unit costs 1702
F-15E:
  Program funding 1764
  Purchase 1752
F-15E/F-16E:
  Comparison 1762
  Performance capabilities 1752
F-16 1592, 1705
  Cost growth 1754
  Cost increase 1747
  Fighting Falcon 1667
  For ANG 1339
  Production line 1646
F-100:
  Engine 1645
  Modification for 1744
F/A-18 Hornet 1469, 1474, 1507, 1509, 1553
  Procurement profile 1508
FAASV 1386
FLIR 1341
Fighter:
  Aircraft, tactical and interceptor 1336
  Attack force:
    36 wings 1574
    Future plan 1575
    Objectives 1566
  Inventory life 1578
  Maintenance indicators 1568
  Modification and improvements programs 1581
  Mix requirement 1587
  Roadmap summary, Air Force 1599
Fire support 1375
  Systems 1335
  Team (FISTV) 1381
Fixed wing aircraft 1335
Fixed wing versus helicopter 1446
Flares 1490
Flight simulator complex 1427
Flying hour funding 1567
Force design 1268, 1272
Force growth toward 40 wings 1573
Force modernization 1461
Forces, balanced, need for 1280
Foreign military sales credit 1337
Forward looking infrared radar (FLIR) 1337

G

GBU-15 1673
Ground combat equipment, ARNG 1335
Ground laser locator designator (GLLD) 1380

Page

Ground-launched cruise missile 1681
Ground weapons simulators 1336
Guardrail V 1401

H

HH-60 combat helicopter 1661
HEMMT, 10-ton 1407
HMMWV 1409
Handgun, 9mm 1332
HARM (AGM-88) 1516
    Low cost seeker 1554
Harpoon (AGM 84A) 1482
Harrier 1530
Heavy forces 1270
Helicopter comparison chart 1550
Hellfire:
    AGM-114 1483
    Anti-tank missile 1302
    Financial summary 1303
Howitzer range 1271
Hughes contract option 1749

I

I-Hawk 1389
IFF systems 1759
IOC 1816
IR Maverick (AGM-65F) 1482
IRR Maverick 1717, 1718
Infantry antiarmor weapon 1433
Infantry division (motorized) 1275, 1277
    Equipment 1278
Intertheater airlift master plan 1654
Interoperable IFF system 1742

J

JSTARS 1773, 1817
    Funding 1795
    Funds 1812
    Language 1788
    Outline 1784, 1785
    Planes equipped with 1790
    Program execution plan 1793
JTACMS 1461, 1773, 1805, 1818
    Commonality potential 1803
    Design criterion 1821
    Funding 1807
    Funding profile 1816
    Is conventional 1798
    Language 1801
JTFP 1811
Joint programs 1776
Joint tactical information distribution system (JTIDS) 1736

K

KC-10A airlift/tanker aircraft 1659
KC-135 reengining 1341
KC-135R tanker aircraft 1660

L

LHX 1436
    Army aviation procurement 1312
    Developmental goals 1309
    Discussion 1308
    Family 1307

LHX—Continued Page
- Financial summary 1314
- Keys to success 1313
- Procurement phasing 1311, 1312
- Technology leverage 1310

LVT SLEP 1559

LANTIRN 1589, 1714, 1715, 1757, 1769
- Effectiveness 1674

Laser Maverick (AGM-65) 1483

Light antitank weapon 1556

Light armored vehicle 1558

Light Attack Helicopter Squadron (HAL) 1545

Light division 1275, 1284, 1288
- 10-K 1281
- Fiscal year 1985 procurement 1445
- Flexibility 1282
- Impact on R&D procurement programs 1434
- Modernization 1286

Light forces restructuring 1285

Logistics:
- Burden 1768
- Costs, additional 1744
- Vehicle system 1560

M

M1 Abrams tank 1290, 1293, 1357, 1358, 1359, 1431, 1456
- Engine 1297, 1298
- Production rates 1446

M1E1 tank 1560

M16A2 rifle 1687

M19 machinegun 1287

M60A3 1361

M109 howitzer improvement program 1379

M113 armored personnel carrier 1364, 1446

M-88A1 recovery vehicle 1410

M198 howitzer 1379

MC-130H special operations aircraft 1662

MJU-18 1492

Management initiatives 1610

Maneuver concept 1266

Marine aviation, status of 1521

Mastiff 1496

Maverick air-to-surface missile 1671

Medical:
- Equipment 1336
- Research 1423

MILSTAR satellite communication system 1625

Missile(s):
- Air-to-air 1569
- Common 1820

Missile system, common, Army/Air Force 1821

Mission:
- Duplication of 1447
- Support aircraft 1337

Modernizing Div 86 1273

Mortar:
- Medium extended range 1558
- Replacement, 81mm 1556

Motorized division (9th) 1434

Munitions 1809, 1810
- Acquisition plan 1723
- Conventional 1756
- For dual role fighter 1756
- Improved conventional 1808

Multiple launch rocket system 1377

N

Page

- NCO's, quality of ... 1283
- NAVSTAR global positioning system ... 1630
- Navy/Marine Corps tactical programs ... 1465
- NATO allies, systems discussed with ... 1810
- NATO/Warsaw Pact:
  - Combat aircraft in place in Europe ... 1664
  - Force comparisons ... 1782
- North American air surveillance system ... 1634
- Nuclear tipped rockets ... 1800
- Nuclear weapons, battlefield ... 1447

O

- OA-37 observation/attack jets ... 1764, 1765
- Operating window ... 1590
- Operation and maintenance costs, growing ... 1445
- Operational test and evaluation (OTEA) ... 1438
- Osmosis water system ... 1557

P

- P-3C Orion ... 1476
- PLRS ... 1414
- Patriot ... 1315, 1316, 1318, 1321, 1388, 1431, 1457
  - Contracts ... 1322
  - Financial summary ... 1324
- PAVE PAWS radar ... 1636
- Peacekeeper ICBM ... 1616
- Peacetime operating stocks ... 1758
- Pershing II ... 1376
- Pershing missile system ... 1458
- Pilot readiness, quality of ... 1529
- Pistol, 9mm ... 1435, 1557
- Precision location strike system (PLSS) ... 1723, 1735
- Procurement:
  - Multiyear ... 1439
  - Totals, fiscal years 1975-84 ... 1586
- Procurement/acquisition ... 1450

Q

- Quick Look II ... 1402

R

- RF-4C:
  - Tactical reconnaissance aircraft ... 1680
  - Upgrade ... 1767
- RPV ... 1398, 1555
- Rapier surface-to-air missile ... 1670
- Rationalization standardization and interoperability (RSI) ... 1459
- Readiness ... 1444
  - Total force (MC) ... 1485
- Readiness and sustainability ... 1644, 1647
- Rembass ... 1399
- Reserve components ... 1261, 1271
- Retrofit program, 5-ton ... 1557
- Ring laser gyro inertial navigation system ... 1767
- Rockets, request for ... 1558

S

- SH-2F Seasprite ... 1477
- SH60B LAMPS MK III ... 1475
- Satellite terminals ... 1722
- Sergeant York ... 1292, 1324, 1325, 1391

Page

Sergeant York—Continued
  Audit 1327
  Financial summary 1332
  Report 1328
Sensor fused weapon 1725
SINCGARS 1413
Sidewinder (AIM–9M) 1480
Simulators and trainers 1649
  Training 1426
Small emplacement excavator 1287
Softare research 1462
Sole source 1439
Soviet IR tactical air defense weapons 1489
Space:
  Launch and operations 1640
  Shuttle 1641
Spare parts 1446, 1450, 1453, 1557
  Acquisition 1648
  Replenishment 1558
Spares and repair parts, aircraft and missiles 1644
Sparrow (AIM/RIM–7M) 1480
Special mission divisions 1274
Special operations and rescue/recovery forces 1660
Squad automatic weapon 1373
Stinger 1393
  Air defense missile 1291
  Man-portable surface-to-air missile 1670
Strategic:
  Air defense forces 1572
  C^3 1624
  Defense 1632
  Forces 1612
  Offense 1614
Strategic defense/air defense 1760
Submunitions development 1727, 1728

T

T–16 or T–22 1816
TH–57 Sea Ranger 1478
TR–1 reconnaissance aircraft 1680, 1740
TR–1 and C–18, cost difference 1792
Tactical:
  Air control system 1741
  Air forces 1665
  Air patrol 1721
  Air wings, Reserve 1539
  Command and control 1722
  C^3 countermeasures 1739
  Fighter roadmap overview 1576, 1582
  Fighter upgrade 1343
  Fighter wing, equipping and sustaining 1583, 1584
  Procurement 1497
  Programs, Air Force 1563
  Reconnaissance 1723
TADS/PNVS 1430
Technology base 1418, 1611, 1771
Technology, uses of 1259, 1261
Test bed and procurement, Fort Lewis 1446
Theater forces 1663
Threat array 1784
Threat to national security 1607
TOA fiscal year 1985 1486
TOW missile carriers 1335
TOW 2, improved TOW 1371
Transition, U.S. Army 1265
TRI–TAC 1412
Truck, 5-ton 1406

Page

U

UC-12B 1479
UH-60 Black Hawk 1403, 1404, 1435, 1459
Ultra low sidelobe antenna (ULSA) 1722
University R&D 1771
U.S. engineer versus Soviet comparison 1430
U.S./Soviet:
    Bomber development history 1619
    ICBM development history 1614

V

Vehicle(s):
    Cargo-utility 1720
    Passenger carrying 1721
    Shortage 1765, 1766
    Special purpose 1720
Vulcan (PIVAD) 1392

W

War consumables 1652
War fighting doctrine 1759
Warfare, electronic 1554
Warranties 1438, 1453
    Engine 1745
Vehicles covered by 1766
Warsaw Pact follow-on echelon threat 1783
Weapon(s):
    Conventional 1724
    Loads 1694
    Procurement, air-to-surface 1570
    Sensor fused 1725, 1726
    Standoff 1697
    Systems, assessment of 1459
    Systems upgrade 1336
Wild Weasel aircraft contract 1766

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